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Letters

Male Ruby-throats and Syrup Feeders

(Very belatedly we are printing an interesting letter from a well-known Canadian ornithologist and bird-bander. —The Editor)

May I compliment Cass Payne on her lovely vignette on feeding ruby-throated hummingbirds in your July-August 1955 number. It was written with fine appreciation of the beauty of things we may see and bore evidence of much keen observation.

I believe I have the answer to the question of whether or not male ruby-throated hummingbirds come to syrup feeders. Neither did Miss Althea Sherman get any males to come to her hummingbird feeding bottles in Iowa, but here at Pimisi Bay in central Ontario it is a rare summer when the male ruby-throats do not come to our sugar-water fountains. Usually the first bird that arrives in the spring is a male. And, having been here the previous summer and obviously knowing his way about, he immediately searches the places where the bottles ought to be. If we have not anticipated his early arrival, we make all haste to produce the sweet sources for him, and the next instant he is there, sipping long and hungrily. Thereafter a female may arrive and perhaps at the same time another male and a second female, for we have usually two resident pairs. Competition at the syrup is keen, male chases male and females, female chases female and is chased by male. But the pairs that belong together tolerate each other unless they make a mistake in recognition, which may happen occasionally. They make good use of the gratis food supply all summer until August. Then, suddenly, the males are no longer there, juvenile twitterings are heard, migrating hummingbirds hover around the bottles unable to find out their use, and by the middle of September the last female is gone.

The solution to the problem is to be found, I think, mainly in the availability of food and time. The males do a lot of gnat-catching from high perches, but I have seldom or never seen a female do this. The syrup source is an easy and assured supply, which is attractive to the birds for these two very reasons. When the male does not court, he visits flowers, catches gnats, sits and roams all over the "female neighborhoods." I am sure that in the South the natural nectar is much more plentiful

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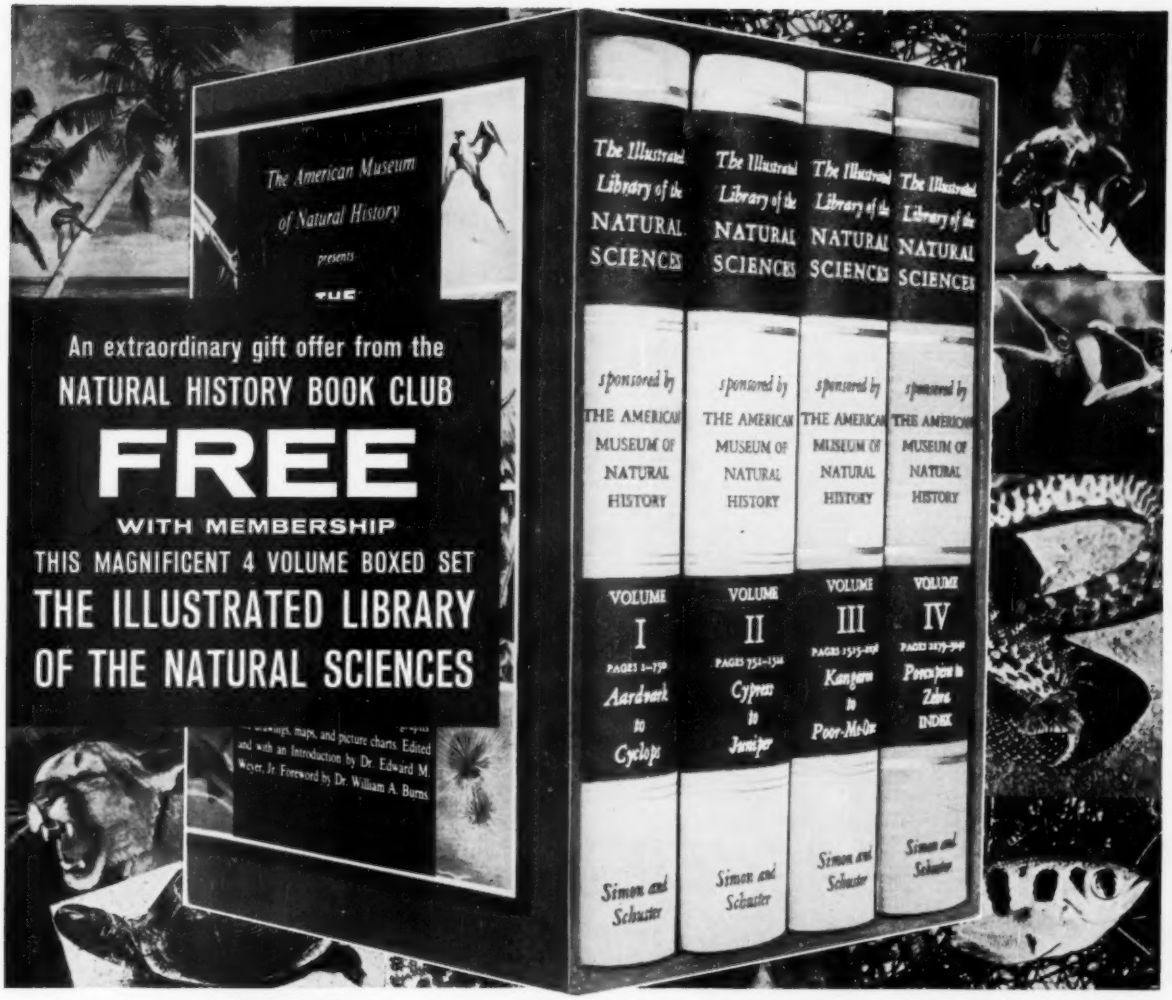

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than here in the North, where there are sometimes periods in between blossom times or of cool weather when our hummingbirds may have to do a lot of hovering and searching to find enough food. The sugar fountains are always dependable. Perhaps Miss Payne arrives at her Michigan cabin a little too late to influence the habits of her male hummingbirds. Early in May there are often periods when the artificial food supply may be resorted to by necessity, and found satisfactory.

As to the female, she is busy, builds the nest, lays the eggs, incubates, feeds the young. Her moments for feeding are far shorter and rarer than those of the male. She uses the certain and never-failing syrup bottles often and consistently in order to get the most possible feeding into the shortest possible time, as well as all the blossoms and sapsucker borings that are conveniently around or near the way to and from home. It is especially profitable for her.

So there are many things—weather, blossoms, gnats, general daily activities—which may prevent or induce male ruby-throated hummingbirds to feed at our windows, but those of greatest influence are hunger and habit.

LOUISE DE KIRILINE LAWRENCE
Rutherglen, Ontario, Canada

Enjoyed "I Love Crows"

How we enjoyed E. J. Sawyer's article, *I Love Crows*, in the March-April 1959 issue of *Audubon Magazine!* Memories of two of the blackest are always with us. We found "Jacob and Esau" in the woods, blown out of the nest, and fearing for their survival we took them home. Esau was in bad condition, already cold to the touch, but raw hamburger pushed down the throat accomplished a miracle in two hours.

When they were ready to face the world, we banded and released them, hoping that they would be off before we became too attached to them. But they would return and peer through all the windows, looking for me, sometimes perching ridiculously on our small trough feeder, where they could see into the kitchen. Their antics on the feeding ground provided a "floor show" for our guests who sat by the window.

Alone, I would sit under the oak tree where they would come to perch on my head or shoulders. No loud cawing then, just whispered "sweet nothings" while they tweaked at my hair. Jake was always the handsomer and stronger of the two and probably more venturesome, so we were sad to hear that he was shot by a hunter who "just did not like crows." Esau also became sturdy and handsome, and would come alone to the windows until the end of October, then no more. Spring is here now, and we search the skies in vain for our shiny black rascal.

MRS. EDWARD F. HARMS
Bloomington, Minnesota

Wintering Robins

This is to inform you that on Sunday, February 8, 1959, on the Deep Hollow Road in Dutchess County, New York, I discovered a vast flock of robins. According to the information I have available, these birds are summer residents in this area arriving in early March and departing by the middle of November. Ornithological maps indicate that robins should not be found in this region at this time.

The birds have apparently been here all winter. An acquaintance who lives near where I saw them informs me he has been aware of them for quite some time. The typography of this countryside is characterized by an assortment of weird tumuli, domes, and hollows. A game sanctuary is located on the Deep Hollow Road which runs from a considerable elevation at the hamlet of Lithgow down to the village of Wassaic

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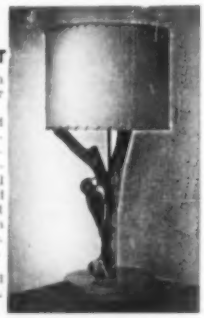

in the Harlem Valley. Forest, much of it pine, is found there, with a turbulent creek curling deep down the tree-studded slopes, at its base. Perhaps the shelter thus afforded accounts for the unexplained presence of the robins.

I fail to understand, though, how they are finding enough to eat in the bitter cold and icy weather that has typified the winter of 1958-1959. Will you advise me if anything can be done to provide them with food, and will you pass the information of their location along to the proper authorities who may find it indicative of a change in the robins' migrations?

WALLACE B. ALIG

Millbrook, New York

Comment

During winters that are reasonably free of snow, some robins often linger in the north to New England, upstate New York, and west to Iowa, especially after a mild open fall. There are also records of robins wintering in Nova Scotia.

The robin, and the bluebird, are not as strongly migratory as the house wren and other birds which depend mostly on insects for food. Robins, bluebirds, catbirds, brown thrashers, and hermit thrushes, which also winter occasionally in the north, live (during the winter) on the berries of cedar trees, grapevines, smilax, and the fruits of other plants which grow in hedgerows, gullies, and in other protected places.

We doubt that Mr. Alig could attract a wintering flock of robins to his bird feeders, although this might be worth trying. Robins at my feeders in *summer*, eat white bread, raisins, grapes, and cherries. —The Editor

Pileateds at Suet Feeders in Indiana

In reply to the letter of Mrs. Southgate Hoyt in *Audubon Magazine* of January-February 1959, we are sending proof that the pileated woodpecker does eat suet from a feeder. What could be more proof than a photograph? The photograph was taken by Miss Emma Schlender of Indianapolis, Indiana. A Leica camera with a 400-millimeter telephoto lens was used at a speed of five-hundredths of a second and an aperture opening of f.5. The feeder is about 10 feet from the window. The camera was inside the house and about six feet from the open window.

Over a period of eight years we have observed many pileateds eating suet from both our neighbor's feeder and ours. We supply about six pounds of suet a week. At first we were only sure of one pair. Last summer we saw eight at one time. We have placed sunflower seeds as well as other seeds on the suet but have never seen the pileateds eating seeds. Other woodpeckers enjoy them. During the summer, when the leaves are out, the pileateds visit the suet only occasionally. This tends to disprove the belief that the feeding of birds makes them lazy.

As for the increasing tameness, we feel they are as cautious as when they first came to the suet. They make quite a noise as they fly through the woods, as if to say, "Here I come! Get out of my sight!" We obey their warning for it is always a thrill to see them even though we see them often.

MRS. J. LELAND SEALE

Nashville, Indiana

Pileated at Suet in Wisconsin

For the past month a pileated has visited our suet, huge pieces of which

Pileated woodpecker eating suet from a feeder in Indiana. Photograph courtesy of Emma Schlender.

are wired to a dying maple tree a few feet from my dining room window. On March 3, 1959 I observed him eating suet, for the third time that day. He is usually on hand between 7:00 and 8:00 a.m. for his breakfast and returns for more suet occasionally until around 3:00 or 4:00 p.m. In between times, he pecks around and feeds a little on this and another dying maple and also on our ancient black walnut trees where he often takes a nap, high up, after breakfast. He can only be observed from indoors and then with caution or away he flies to the adjacent "thinned out" woods—his headquarters.

A friend living about two miles north of me had a pileated at her suet feeder, eating suet, earlier this winter but she hasn't seen him lately, so it may be the same bird.

"Pilly" affords us much pleasure and we walk carefully every time we see him, he is so special. Prior to this experience, we rarely saw a pileated even at a distance, although we have had suet in the same place for years.

ELINOR M. MCCLEAN

Antigo, Wisconsin

Pileated at Suet in Tennessee

With regard to the inquiry from Mrs. Southgate Hoyt regarding pileated woodpeckers and your editorial request in the January-February 1959 issue of *Audubon Magazine*, I have the following experience to report:

For the past month a female pileated woodpecker has been feeding with regularity at two suet baskets mounted on a large-many-trunked willow tree within 25 feet of my house. We live in a suburban neighborhood which has become pretty well built up, but there are wooded hills within three-fourths of a mile from us. Our trees, and those on the adjacent properties are mostly hackberries, maples, and oaks, planted 20 to 30 years ago in old meadowland. The willow, which we planted, lost its top in an ice storm in 1951. The stubs were cut off and new growth has grown to a considerable height from their tops. The stubs, however, are hollow and one or two are obviously rotten. The tree also seems to have grubs in it which attracted the pileated woodpecker. I have had feeding stations for many years but never had such a visitor before.

In late January I was puzzled to discover pieces of bark and fresh chips of wood under the tree. A few days later I saw the big woodpecker cutting a vertical oblong hole through one of the hollow trunks. Watching it on subsequent days, I soon found that it was aware of the suet. At first it would sidle around this and take only one peck in passing. Lately it has been stopping and feeding as regularly as the downies, sapsuckers, and red-bellied woodpeckers. Like the others, it will feed for an interval, then move on up the tree and perhaps come back to the suet a little later. There is no doubt as to the feeding. The suet baskets usually contain commercial suet cakes mixed with seeds, but sometimes I use scraps of white fat from the butcher.

JESSE E. WILLS

Nashville, Tennessee

Pileated Woodpecker at Suet Feeder in Minnesota

We, too, along the north shore of Lake Superior in northern Minnesota have the pileated woodpecker at our suet feeders. One especially has been back for several years. It has become accustomed to our going in and out the door and does not fly away. The feeder is about 15 feet from the door.

Turn to next page

We also have a suet feeder by the kitchen window. I can wash dishes and move about in the room without frightening the pileated woodpecker away.

In the spring and summer when the pileated flew over and saw me in the yard, he swooped down and buzzed around my head and shoulders.

MRS. B. A. PENNER

Two Harbors, Minnesota

Western Bluebirds and a Billboard

One spring day, in 1953, a pair of western bluebirds flew through our patio. The male glistened an intense deep cobalt blue from crown to tail including his entire face and throat. There was only a trace of chestnut across his back and shoulders. His breast and flanks were a rich chestnut-red fading to gray under his tail. His little mate was a soft brownish-gray. She looked more velvety than feathery. Only the bright blue flash of her wings and tail identified her as his partner.

For the most part western bluebirds are winter visitors in our locality, banding together and fluttering about in the open country where insects abound or in the tops of deciduous trees enjoying the glutinous white berries of the mistletoe. In March they disappear into the wooded canyons and lower mountain slopes. The prime requisite at this time is a well-spaced, broken woodland, providing nesting sites and exposed lookout stations. Natural holes in oaks are the most desirable spring-time homes for these birds, although the deserted holes of woodpeckers are often used. In some localities in the West these birds have been induced to occupy bird boxes. We have never heard of one nesting in a box in California. In fact, no western bluebird had ever nested within ten miles of our home to our knowledge, but there they were, day after day, during April, foraging from their lookout stations on the clothesline, the picket fence, or a high weed. Most of their food was taken from the ground when they dropped from their elevated positions upon some insect. Only occasionally did they hunt by hovering over the gulch behind the house.

And then one day it happened! The female dropped upon some unsuspecting insect and headed for a large billboard facing Sanborn Road—about 100 yards away. It was a local automobile agent's gaudy advertisement featuring a member of the thrush family in flight and the caption "more zoom when you need it." Through binoculars we watched our bird as she perched on the tip-top. Then suddenly she darted into a hole in the upper right hand corner of the board. It occurred to us then that we had not seen the male all week.

On May 15, she brought three fledglings to the garden and carried tiny insects to them. What well-behaved little fellows they were, huddled together on the low gate near the berry patch. Their breasts were as bespeckled as those of young russet-backed thrushes, their tails were short and quite blue, and their bills still displayed the yellow "hinges" of the nestlings. They sat quietly and accepted their parent's offering—just a little fluttering of wings and a patient wait while she searched for food for the next one. There was no pursuit and noisy appeals by the youngsters such as we had so often noticed when the finch parents tried to satisfy their insistent young.

The male never reappeared. We couldn't bring ourselves to think that he had deserted this lovely lady and the three charming offspring. In a neighborhood full of cats and little boys with B-B guns, anything could happen. Maybe he just didn't have "more zoom" when he needed it.

VIOLA ANDERSON

Salinas, California

A Bird Apartment House

Here is a "double deck" bird apartment house, consisting of a wren's house with a robin's nest on top.

Until this year a pair of wrens returned to build their nest in the wooden wren house on the farm of my father-in-law in Ada, Michigan. This year the robins built their nest atop the wrens' house, and, of course, the wrens did not come to the nest box.

ETHEL ATKINS

Grand Rapids, Michigan

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Miss Miller Receives Margaret Douglas Award

The National Audubon Society is pleased to announce that Miss Shirley Miller, director of Audubon Junior Clubs, has received the Margaret Douglas Award for her services to conservation through her work with children. Miss Miller received the bronze medal at Richmond, Virginia on May 7, 1959, during the annual convention of the Garden Club of America. The medal, presented to the Garden Club of America by Mrs. Robert D. Sterling, is called the Margaret Douglas Award. The citation to Miss Miller, which accompanied the medal, was as follows:

Margaret Douglas Medal

"As Director of the Audubon Junior Club programme, combined with overwhelming personal enthusiasm for the cause of conservation, Shirley Miller has spread her influence to thousands of the nation's young people.

"She is filled with new and imaginative ideas for this work. She possesses a sure knowledge of children's interests. She has a remarkably warm and intimate communication with conservation teachers and it is not too much to say that the present spread of interest in this field is due largely to her tireless energy.

"Shirley Miller, The Garden Club of America recognizes your worth to our country and awards you the Margaret Douglas Medal for notable service to the cause of conservation education."

A PROTEST AGAINST SPRAYING

I AM only one weak voice in a nation that has grown unmindful of weak voices. I am one of the gathering multitude that overflows the earth. To speak into the storm and be heard is too much to hope for, yet I cry out my lungs in the face of it. Nor is it to the Lord that I speak, but to Man.

Since I first joined a camp to share a fire with my primitive companions and assumed the duties of living together with other men, I have been donating my freedom to the common cause of society. The security of numbers possessed me, but the numbers of my society have increased to the point where I am not known to exist by it. Nor do I know who is the leader of the society to which I belong. Daily I am called upon to donate more freedoms to the cause under the guise that they are not essential freedoms, that they are not freedoms at all, but rather part of something called a higher standard of living.

Now I am expected to pay for the thundering spray plane that rocks my house while I am in bed, that makes me tumble from the bed, dash out ill-clad to cover the new row of lettuce that catches the early morning sunshine. I have no time to cover the rhubarb, the spinach, the birdbath. I call the dog into the house. The drifting spray is already upon us.

I close the windows of the house, and am glad the car is in the garage. I had forgotten the goldfish pool, but it is too late. I listen to the birds in the garden, singing: the oriole that is sitting on eggs in the elm, the killdeers that recently hatched and are in the marsh crying, the yellow warbler that I saw yesterday while lying on my back looking up into the leaves of the butternut against a blue and white sky. I hear the catbirds in the bushes. They are kind companions. I am struck with guilt that I am a part of the destruction wrought upon nature by this poison cloud that is descending. I can smell its oily suffocation already. I recall the statement that it will kill mosquitoes, sawflies, budworms, shoot moths, and others. I recall also that the paper said, "Keep your pets and children inside." Have the brooding birds been notified to keep their nestlings shielded? The lady bugs that I saw yesterday carefully plucking aphids from a long green stem will soon be turning over, to become dead, useless jewels in the litter of leaves. They have no rights.

The wild bees and the honeybees have pollinated my cherry tree and my apples and had more work and more living to do. This spray is our repayment to them, as to so many of the members of the society of nature. We no longer need them. Our crop is made.

Not much of the death will be seen, but it will occur. When I consider that we are laying down this stratum of dead insects and with it dead birds and fishes as part of our contribution to the future of the earth, I am disgraced. I ask myself how it can be that I have lost so much freedom and self respect just for the sake of freedom from mosquitoes, for the sake of saving a few favored plants from attacks by insects. I can remember when the smoke and heat of the fire was used to keep the insects at bay. I can remember rubbing fragrant herbs on my arms and face, or citronella. I can remember using flit and bug bombs and yellow bulbs. I had some control over them.

I can remember, too, that clouds of mosquitoes humming in a dance through the woods often ignored me, and that on a windy point of some island or hill, and in dry seasons they were absent. Many evenings sitting in the yard I have seen and felt mosquitoes come at twilight, but when the summer darkness settled down they were gone, or forgotten as the flying squirrels played among the maples, and the dryflies and katydids sang in the trees. It was a world heavy with the feeling that all of us are living things, a part of an ancient and sacred society that has found a way to live down through eons of time through processes of slow change,

Continued on page 181

Have We

A CONSERVATION

By Monroe Bush*

THE United States owes as much to the wealth of her land as to the intellectual wealth that was imported from the Old Country. Ideas and principles alone might never have made this nation great. That there was space enough for everyone, that there was natural wealth to spare, are fundamental explanations of the American saga. Let us never underestimate what the natural supplies of the earth have meant, not only and obviously to our American economy, but to our political, social, and cultural life.

Nowhere is there a better example than in this country of a great civilization growing literally out of the minerals and the humus, the climate and the dimensions of its section of earth. Yet I doubt that this has been understood very clearly, and certainly it has not been understood very widely. . . .

From these origins in natural wealth we face the fact today that resource consumption is rising—and seldom have so few words implied so much. . . . We know with regret that our population is not static, and that it is bursting yesterday's forecasts. . . . So startling is this growth, both per capita and per capita consumption, that it is impossible to make a 50-year projection of resource needs with any reasonable accuracy. Repeatedly these must be revised upwards; repeatedly the facts outstrip the forecasts. So we come to the urgent question: "Have we a Conservation Conscience?"

"Conservation" is the effort made toward a permanent balance between human need and natural supply. The physical requirements of society must be met from the resource-reserves of the natural world, but met in a way which, while fulfilling the needs of the present, will also assure the maintenance of this reserve for the future. . . . This is the goal of conservation, but obviously and sadly a goal beyond reach. The realities of life restrict us to the more modest hope that we will, at least, move in the direction of such a goal, move toward a "permanent balance."

Now what exactly do we mean by such terms as "natural supply" or "resource reserve" or "natural resource"? We refer to the wealth of the earth: to (1) unrenewable supplies such as coal and oil and horizontal space; to (2) renewable supplies such as soil and water, and the plants and animals which exist in an ecological relationship to these; and to (3) aesthetic reserves such as are found in wild, natural beauty, unadulterated by men.

Our "conscience" toward the conservation of these resource reserves can be defined as concern, motivated by idealism. Within our context, therefore, conscience is an attitude of responsibility for striving toward a permanent balance between human need and natural supply.

The question is: Have we such an attitude in this country?

Obviously there *is* such an attitude among some people—each one of you is a witness to it. Obviously there *is not* such an attitude among many other people. What we must determine is whether the conservation conscience is dominant in American society, or whether it is submerged beneath other attitudes that are antagonistic or indifferent to it.

From the earliest settlements to the present, the illusion has persisted in America that space and natural wealth are inexhaustible—or virtually so. This illusion of the American cornucopia is a refrain that runs throughout the whole of our national mythology. It springs not only from the vastness of the country in contrast to the mere handful of initial settlers, but from our inherent optimism. As a society we have been confident of our virtues, of our power, of our rightness, of our good sense—and most of all confident of our good luck.

Immersed in this tradition of optimism and confidence, the people have, for the most part, had little inclination to question the cornucopia. They have not wanted to do so. They have shut their ears to the experts whom they call alarmists.

Born and nurtured by optimism, people are not apt to get excited by the spectre of falling water tables as long as water flows from their bathroom faucets; they do not tend to despair at the shrinking saw-timber supply as long as they can buy two boards for kitchen shelving; they are not going to become greatly concerned by the decline in horizontal living space as long as they can buy homes within an hour's drive of the office or factory.

There is absolutely no evidence to support the contention that a majority of the citizens, or even a small but noticeable minority, are consciously and intelligently hopeful that this nation will move toward a balanced accounting of its natural wealth.

If we were to add all those who belong to any sort of conservation organization, and all who can read and understand a newspaper account of resource economics, and all who within the past 12 months have used the word "conservation" at least once—if we were to add all these, the total would be but the smallest fraction of the number of people who view the poorest-rated Western show on television!

We cannot honestly pretend that

* We are pleased to present for our readers a condensation of an address given by Mr. Bush at the General Session of the 24th North American Wildlife Conference in New York City, March 3, 1959. Monroe Bush is Assistant to the President, Old Dominion Foundation, Washington, D. C.—The Editor.

CONSCIENCE?

Only a small dedicated corps of specialists fight our battles for conservation. Here is how each of us may help.

the American people, as a national society, have a conservation conscience. . . . Yet within the past 50 or 60 years, astonishing steps have been taken by this nation to conserve some of its resources, in some places. The state and national parks, the state and national forests, the wildlife sanctuaries and the constructive hunting and fishing laws, the growth of sound commercial forestry, the increasing conservation of the soil, the wiser management of water—here are real victories. To be sure, the war is not won. The war will never be won. But these are battles within the war, and they were won. In so far as each represents the triumph of a sound conservation principle over an unsound exploitative one, each battle was a victory for the conservation conscience. In 10,000 specific instances this conscience, while never enjoying majority support, has been dominant. The reason is simply that there exists a small, dedicated corps of resource specialists who, with endless personal effort and sacrifice, manage to make the conservation conscience dominant in this tremendously complex society of which they are, numerically, but the smallest fraction.

This is my chief point: the conservation conscience can be dominant in American life from time to time and place to place, without once representing a conviction on the part of a majority of the people. This is inevitably the best for which we can hope. The mythology of the cornucopia goes too deep into our folklore to be dislodged by mere facts.

Where there has been no such mythology, on the other hand, the story can be quite different. The most conspicuous examples of a conservation conscience are found in those countries where a high degree of civilization must make exorbitant demands upon an insufficient supply of land and land-wealth. When human need far outstrips the easily available natural supply of resources, it is not uncommon to find an enlightened and energetic effort underway to raise the natural supply toward the levels of the need.

This is true throughout much of western Europe. It is true in the forests of Sweden and on the farms of Japan. Of course, the quality and success of these efforts vary with local culture and the local industrial economy. Unsatisfied resource need does not, of itself, assure an effective conservation conscience—as evidenced by mismanagement of the natural supply throughout the West Indies and Central America. But these are exceptions in degree only, and in the main the case seems to me very clear that the greater the imbalance between social need and natural supply, the greater the conservation conscience.

Coming back now to home shores, we find evidences of this same situation. When something is in very short supply, such as the whooping crane, there is an energetic effort to safeguard and, if possible, actually to increase the supply. When something is relatively abundant, such as western land, there is only a feeble and faltering concern for exploitative uses which do not immediately or noticeably affect society's limited present needs. . . . In this country, as in the world over, people are excited by what they can see and by what affects them, by what is close-at-hand and obviously urgent. Facts, taken in themselves, have seldom stirred the hearts of men, anywhere. . . .

The work of the conservation conscience must, therefore, be made dominant in American life without benefit of majority support from the people. . . . The great strides made in resource management since the turn of the century indicate that many times and in many ways the conservation conscience has been dominant: in the halls of the Congress; in the offices and agencies of the White House; in the national press; in the councils of industry—though never because of the active and knowledgable support of a majority of the people.

I have said that the people will not really care concerning resource management until there is a gigantic crisis in the resource supply. This is true. But people can be educated to understand an issue about which they may not care deeply. They can be informed, even if they cannot be enlisted. This is the challenge before those resource specialists who, today, possess within themselves a conservation conscience who *are* the conservation conscience of this country. This dedicated corps to whom the nation owes so much must find a way to inform, to publicize, to "spread the word" so that increasing numbers of the people will understand the issues, whether or not they have convictions concerning them. With the gradual spread of such information there may develop a public conservation understanding.

This is our goal, and with the growth of such understanding, those who fight the resource battles themselves will no longer be ignored "in the wings" but will then stand full-center on the stage of national attention to explain to people who can now comprehend the issues, what it is they are fighting for. . . . Such a widespread and general public understanding would make the task of the working conservationist, of the resource specialist, immeasurably easier. It might actually prove sufficient to tilt the scale toward a sweeping victory for wise and far-sighted resource management. . . .

—THE END

A famous photographer reminisces about the

"Who could resist the appeal of that spot where the road made a sharp turn? It was marked by a clump of tall golden-glow . . ."

Wildflowers

of Waysides and Upland Pastures

All photographs by the author

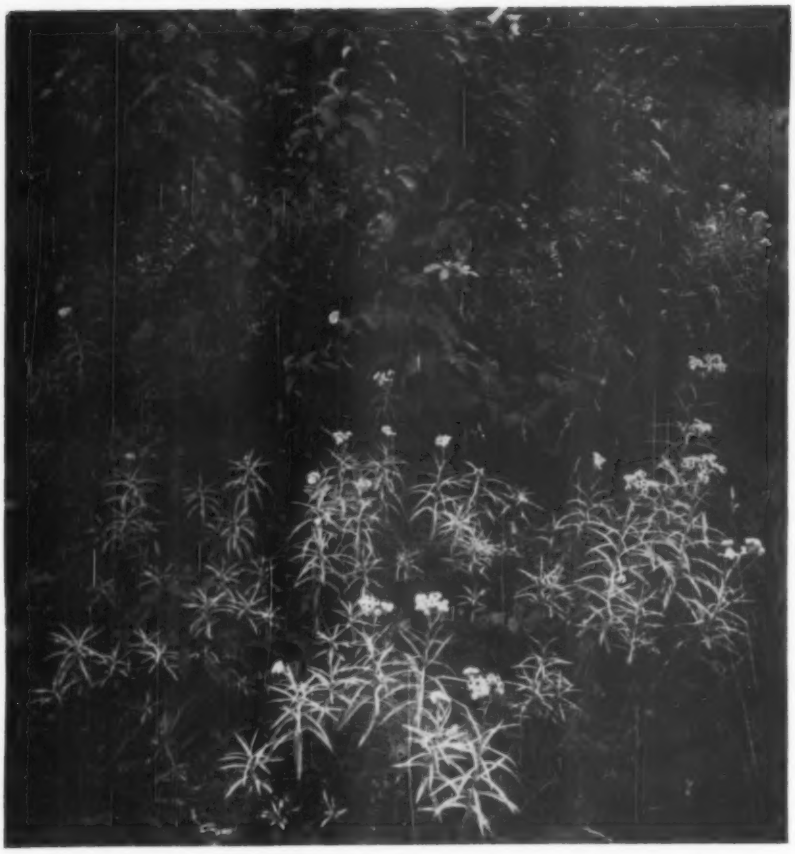
By Samuel H. Gottscho

AN upland pasture! When my mind reverts to the one I knew so well and the old dirt road that led there, what memories and associations are recalled even after many years of absence. Narrow, rutted, unfrequented, except for an occasional auto, a thoroughfare that time forgot, the many wildflowers at its border were a delight, for here they could flourish safe from grazing animals or the scythes of road crews, whose attentions were given to more important highways.

I dream of that warm, sunny August afternoon, when as a novice student of wildflowers I sauntered along this quiet road. I was seeking glorified camera portraits of them as well as ideal landscapes of their habitat and rewarded at each turn by new and exciting floral treasures as well as charming prospects to be pictured.

At a broad stretch of meadows, there was the sunshine of the goldenrods, myriads of their yellow heads swaying in the breeze, and lingering among them some belated clumps of my favorite black-eyed susans, still charming, bedecked in their colorful raiment. The St. John's-wort had passed the peak of bloom, but its brown seed heads were still enlivened by a blossom or two of purest yellow. July's yarrow had been succeeded by Queen Anne's lace,

"The purple bergamot had wandered from the field to the roadside . . ."



"The old boulders surrounded by clumps of pearly everlasting . . ."

still in bloom, but a close inspection is required to appreciate the beauty of its flower-head with its arrangement of tiny flowers in a marvelous geometric design. The bees were happy and busy in the bright sunshine, gathering nectar from the plentiful stores of the red and white clovers and the many goldenrods.

Farther on, how beautiful the old gray weather-beaten zig-zag fence, where already the white, bearded, silken fruit of the Virgin's-bower mingled with the ripe elderberries; or at another point where, in this feathery stage, its vine trailed down from the fence to the carpet of ground pine. Also unforgettable the stand of purple bergamot that had wandered from the field to the roadside to fill the air with the spicy fragrance of its foliage.

Surprises were always met as I slowly traversed this road. Up the hill where it passed through woodland, many species of ferns grew at the sides. At one spot there was a luxuriant growth of interrupted fern, with a few spikes of purple-fringed orchis attracting our attention.

Leaving the woods the road descended to lower ground, where tall joe-pye weed in stately splendor dominated the scene and near which I once found a colony of 26 purple fringed orchis whose rich fragrance was almost overpowering.

Then came the brook, spanned by a little road bridge, its meadow easy of access. I could not pass without a visit to seek what new treasures its banks would disclose. It was on this day I found the one, fiery-red cardinal lobelia blooming at the side of wool grass against the background of the little stream, a habitat picture I have loved for many years.

I might rave about many other lovely flowers that grew in the tall grass of the meadow adjacent to the brook—the chaste-like white fringed orchis; the graceful yellow swamp candles of the loosestrife family, and the satiny, shell-pink tiny flowers of the marsh St. John's-wort.

Often the road itself was the inspiration for a lovely camera study. Who could resist the appeal of that spot, where the road made a sharp turn. It was marked by a large clump of tall golden glow in the farmer's dooryard, which provided a pictorial foreground to the curves of the road winding up to the sugar maple that guarded the valley on the crest of the hill.

Now, I see ahead the fence opening that marks the beginning of the old cowpath leading to the upland pasture. When I first knew this field, some five or six cows grazed there all summer. I can still see them with mind's eye in the quiet of late afternoon, slowly walking single file down to the barn, the leader's bell making sweet music all the way.

Ten years ago, they came down for the last time, as the owner had given up dairying and they were sold to be delivered to their new home on the morrow. Since that time their old feeding ground has gradually reverted to nature. The vegetation has undergone many changes and now many prostrate junipers grow all over the tract.

It was a favorite haunt and I loved its wildness and the plant life that had established itself there—the meadow sweets and steeple bushes whose spires vied with the mullein to reach skyward; the old boulders, surrounded by a congregation of hay-scented ferns and the large clumps of pearly everlasting and stands of thoroughwort whose whiteness relieved the monotony of the yellow andropogon grasses that at this time covered the pasture.

My objective was that high point where I could enjoy the vista of the distant lake and the beautiful cloud forms that cast shadows on its surface. And on this day, I recall the large clumps of purple bergamot that spread for some distance waist high in front of me and provided an intriguing foreground for this scene of beauty, which no camera could adequately portray.

The soft breezes, the floating clouds, the peaceful solitude, its quiet only broken by the droning of the many bees feasting on the rich store of nectar offered by the fragrant bergamots, the occasional plaintive haunting little ditty of the field sparrow as background music, all combined to make this August afternoon on the upland pasture an unforgettable experience.—THE END

"Virgin's-bower mingled with ripe elderberries . . ."

"I loved its wildness — the spires of steeplebushes . . ."

"Farther on, how beautiful the gray, weather-beaten zig-zag fence . . ."

This juvenile Gila monster is probably less than a year old. It is marked with black "saddles" which with aging become obscure. The skin develops a mottled pattern as the animal grows older. Photograph by George M. Bradt.

THE GILA MONSTER

What are the facts about our only poisonous lizard? Rarity is only one reason for legally protecting an animal whose behavior does not justify its unfortunate name.

(PART I)

By Charles M. Bogert*

WE call the creature a monster, implying that it is hideous or repulsive, yet we pass laws protecting it for fear that it may become extinct! If this business of protecting Gila monsters seems a bit incongruous it is no more so than the spectacle of a lizard from the desert sitting in water. This is precisely what the Gila monster does when confined to a cage and given the alternatives of remaining on dry sand or taking to a puddle.

If we look into the history of man's associations with this lizard, or learn something of its origins and habits, the anomalous behavior of both man and reptile is explicable. Venom glands present on each side of the lower jaw of fully grown Gila monsters produce and store enough venom to kill over a dozen fair-sized dogs. The lizard's upper and lower jaws are provided with stout but sharp teeth. Most of them are provided with grooves paralleled by cutting edges that permit the flow of the venom into the wounds they can produce. With such weapons to improve the effectiveness of its bite, with a thick roof on its skull, a stout body, and a bone-studded skin that is tough enough to deflect the fangs of a rattlesnake, the Gila monster is fairly well prepared to defend itself. Then why should it be protected — by law?

A fossilized fragment of the upper jaw of an animal in northeastern Colorado indicates that an ancient relative, possibly ancestral to the Gila monster, had virtually the identical grooved teeth, and possibly much the same sort of venom apparatus. This 30-million-year-old fossil shows that Gila monsters have been protecting themselves rather effectively for a very long time. The fragment of the jaw of their possible forefather was safely imbedded in the rock that preserved it when sabre-toothed cats, elephants, mastodons, camels, and ground sloths were flourishing in the Southwest. Leaving behind little more than a few skeletons, they passed on into oblivion, but the lizards with grooved teeth continued.

Climatic changes forced the lizards to withdraw from some regions and to move into others. By the time man arrived, large portions of North America were arid, as they are today. The venomous lizards were

* Dr. Bogert is Chairman and Curator, Department of Amphibians and Reptiles, American Museum of Natural History, New York City. He has made special field and laboratory studies of the Gila monster, *Heloderma suspectum*, the main subject of this article.—The Editor.

probably restricted largely to the desert regions east of the Colorado River, and west of the Continental Divide, ranging on southward on the Mexican mainland east of the Gulf of California. There, in those portions of the desert not too dry to support some vegetation, despite sporadic and uncertain rains during the warm summers, Gila monsters thrived.

We shall never know precisely when the path of man first crossed that of the Gila monster. The first arrivals among the tribes that ventured into the arid lands bordering the Colorado River must inevitably have encountered the lizard. It is to be doubted that the first man to see a Gila monster viewed it with any consternation. Quite the contrary. The slow-moving creature with short limbs and a sausage-shaped body was scarcely terrifying in appearance. It was gaudy enough to attract some attention, and with its yellowish, pink, or reddish body patterned with black, it may well have pleased the first man to behold it. Observing that the lizard was easily overtaken, he may have been tempted to seize it. When the Gila monster was confronted by this strange man-animal with its head so far above its feet, the lizard undoubtedly held its ground, facing this new enemy as it had faced man's predecessors. Its eyes following the movements of its adversary, the lizard repeatedly thrust out a fleshy black tongue, forked at the tips somewhat like that of a snake. If further molested the lizard forcibly expelled air from its lungs to produce a loud hiss that should have been a warning.

Prior to overtaking the lizard the man must have noted its deliberate, plodding locomotion, with the methodical shifting of the stubby tail from side to side to counterbalance the movements of the feet. There was nothing sinister in these movements or in the appearance of the animal. Now, when at bay, it suddenly displayed considerably more agility, turning and snapping with the speed of an angry dog. As the lizard continued to hiss, shifting its body to follow every movement of the man, the man may well have pondered whether this was some-

Typical habitat of the Gila monster near Tucson, Arizona. Photograph by Richard Randall.

LIFE HISTORY OF THE GILA MONSTER

Owing to the secretive habits of Gila monsters in our southwestern states, and their failure to breed in captivity, our knowledge of their life history is fragmentary. Courtship probably takes place at night. In Arizona, pairs mating have been observed in the late hours of twilight, usually during the latter part of July. The eggs are probably laid a few days later in the month or early in August. This is ordinarily near the peak of the summer rainy season, when ample heat and moisture are available for the incubation of the eggs.

Normally from four to seven eggs are laid. Reliable information is lacking, but probably a cavity is scooped out of the sand by the female, which carefully covers the nest after laying her eggs. It is also probable that the female digs her nest in a moist place, but one where the developing eggs will not be submerged by the flash floods that characterize the regions inhabited by the Gila monster. Obscure sensory cues seemingly lead most reptiles to nesting sites that are nearly ideal for the incubation of their eggs, but just how such sites are chosen remains a mystery.

The relatively enormous eggs of the Gila monster, roughly two and three-quarters of an inch long, and an inch-and-a-half in diameter, almost certainly require more than a month to incubate. Contrary to an early account of it, there is no sign of a developing embryo in the white, leathery-shelled eggs laid by captives. The incubation of the eggs of many reptiles in the United States requires from two to three months, and it is probable that young Gila monsters do not emerge from the nest until September or October. Hatchlings are comparatively large, nearly seven inches long, if we include the inch-and-a-quarter comprising the tail. Whether they feed prior to going underground for the winter is problematical, but by the end of the following summer they appear to be approaching sexual maturity, with the body length roughly doubled in size. They enter their third season, ready to breed, when approximately 15 or 16 inches long, from snout to tail tip, after which they grow very slowly. A Gila monster that was 19 inches long when captured gained less than three inches in length during a 10-year period in captivity.

CHARLES M. BOGERT

A Gila monster (left) was thin when it was captured in a drought area. In about six months, when given ample food in captivity (right) it gained about 90 per cent in weight and stored excess energy, as fat, in its tail. Photograph by the author.

thing he could safely seize in his hand.

Once his curiosity had been satisfied, perhaps the man moved away, letting the lizard crawl on to safety in a rodent burrow or a crevice beneath a rock. If he grasped the lizard without taking the precaution of seizing it by its stout neck, the man was soon in trouble. At its earliest opportunity the lizard would have clamped its stout jaws on the nearest flesh. Once the teeth were engaged the lizard would have held on with almost unbelievable force, momentarily tightening its grip each time the man made some effort to disengage the lizard's jaws. Its tenacity would have defied all efforts of the man to gain his release. His consternation must have turned to fear as the venom seeped into his blood, and the pain mounted until it became excruciating. In whatever way the encounter may have ended, both man and lizard must have suffered.

While there is the possibility that the first meeting of man and the Gila monster led to tragic consequences, it is equally probable that nothing of the sort occurred. The lizard *is* potentially dangerous, and there can be little doubt that the human beings who moved into the regions where it lived eventually discovered this—probably the hard way—by being bitten, but any Gila monster seen abroad is looking for food rather than for an adversary. If given the choice it seeks only to escape. It cannot strike at an attacker. Unlike rattlesnakes that launch the head forward with its mouth widely spread and the fangs in position to be driven into the flesh of the victim by a stabbing action, the Gila monster cannot employ its jaws until an attacker is within a few inches of its head. It cannot drive its teeth into the leg of some unsuspecting person who inadvertently wanders too close. In practice this means that virtually the only people bitten by Gila monsters are those who handle captives.

This brings us back to the implications of the reptile's vernacular name (Gila monster) and why it seemed appropriate to the unknown

person who bestowed it. Why should such an unaggressive creature be termed a monster? Neither its maximum size, short of 22 inches, nor its weight of less than five pounds, qualifies it as monstrous. Neither its shape nor its movements are particularly graceful, but its colorfully patterned skin has reminded more than one observer of an attractive Indian blanket. In its natural state it is not odoriferous. It is not slimy; nor can it be described as sneaky, for even though it forages at night to some extent, this is largely a matter of escaping the heat of the desert in summer. Like many other animals it is carnivorous. A somewhat specialized predator, it seeks out the more or less helpless young of rodents, rabbits, and birds, seizing them in their nests. It devours the eggs of birds as well as those of reptiles, a habit shared with many other creatures, including skunks and raccoons, neither of which is regarded as loathsome or repulsive. Do we call it a monster simply because it has evolved an effective mode of defense? Because it carries "concealed weapons"? The answer is not quite so simple.

Actually the name stems largely from the lizard's reputation. Myths and superstitions concerning it were well established prior to the arrival of Europeans, and many of these beliefs were as readily accepted by the new arrivals as they had been by the Indians who created them. For any venomous, potentially dangerous animal acquires a sinister reputation among the people who share its habitat. Their fear of the creature, perhaps originating from a single unfortunate experience, discourages any close scrutiny or investigation, even were they familiar with scientific methods. Consequently they devise explanations for their fears that are based on erroneous assumptions or misguided interpretations. These explanations in turn become embellished when passed on, with details added that eventually result in the animal's becoming endowed with all sorts of abilities, attributes, or characteristics that exist only in the imagination.

The only venomous lizards known to exist are those of the Pacific slopes of North America, except for a small area on the Atlantic side of the divide where one kind occurs in the Mexican state of Chiapas and the adjacent part of Guatemala. Hence it is a fairly safe assumption that the first Europeans to see a venomous lizard were the Spanish conquistadors. They may have been part of the small band of soldiers who accompanied Cortés. What they saw was not actually the Gila monster, but its Mexican relative, which differs in minor respects, principally in having a proportionately longer tail, somewhat different markings, and a greater maximum length, slightly exceeding three feet. It does not live in the cooler portions of the Mexican Plateau, and the Spaniards would not have seen it around Mexico City. However, it is known to exist even now less than

The Gila monster lives within the parts of Sonora, Mexico; Arizona, and adjacent states which are shaded on the map. Within this area the summer rainfall is more than two inches. The dashed line delineates the more arid regions to the west where rainfall is less than two inches, and appears to be a barrier to some plants and to Gila monsters that require moisture in summer. Map by the author.

50 miles to the south on the outskirts of Cuernavaca, in the foothills on the distant side of the mountain range bordering the Valley of Mexico. It was here that an early Mexican naturalist, Francisco Hernandez came to know it, and to be the first to describe it in print.

Hernandez, whose manuscript was completed in 1577, but not published until 1615, followed his description with a brief account of native beliefs concerning the animal. Taking his cues from what he had been told rather than from

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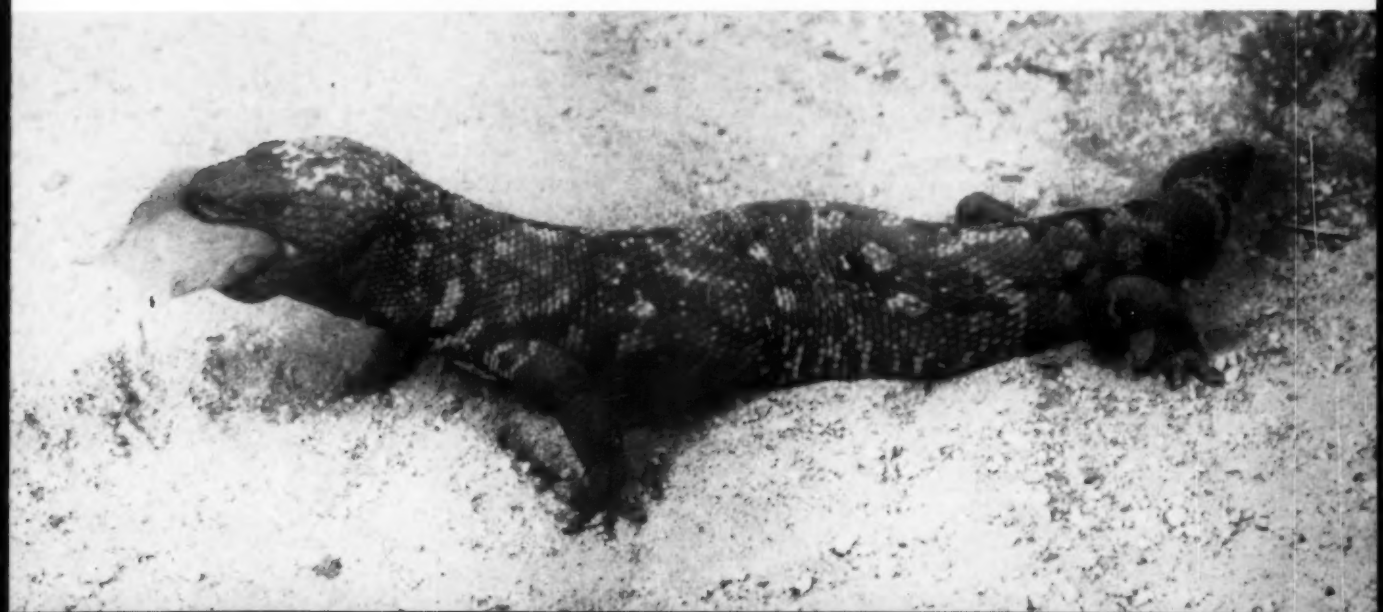


The Gila monster often preys on young rodents, which it swallows whole. It also eats the eggs of other reptiles, which it locates with its sense of smell, then digs the eggs from the nests in which they are hidden underground. Photograph by the author.

OLD MAW—a Herring Gull

By William Scarlett*

OUR house stands on top of a sheer cliff, rising a hundred feet out of the sea, with the whole of Maine's Penobscot Bay opening before us. On the rock in front of our house are a few small balsams and spruces. One of the spruces, 30 feet away, has a flat top. Attached to our large living-room windows is a bird feeding station.

One morning in early June 1957, I was working at my desk just off the living-room, when I heard a knock. I went to the front door but there was no one in sight. I thought this strange, but back at my desk I heard the sound again – demanding, imperious. I went into the living-room and there on the feeding station, peering intently into the room, stood a beautiful herring gull. When he saw me, after giving me a knowing look as though to say, "You know what I want," he turned deliberately away and flew to the flat-top spruce where he watched the windows eagerly.

My thought was that he had frequently taken from the feeding-station the doughnuts we put out for the other birds. That morning, finding none, he had chosen this method of calling my attention to the shortage. I broke a doughnut in half, opened the casement window, and talked to him for a moment. Then while I stood in the open window, not more than two feet away, he flew to the station, swallowed half the food and taking the other half returned to the spruce where at his leisure he consumed it. On the spot I named him Old Maw, after Browning's, "Irks care the maw-crammed beast." And with all that food in his maw, it certainly was crammed.

This was the beginning of a daily visit by Old Maw, often twice a day. If I were in the room and he saw that I had noticed him he considered me intelligent enough to know what I ought to do. If, however, I pretended to be unaware of his presence, or happened to be nodding in my chair, then would come that insistent knocking until I turned toward him: after which he would fly to the spruce and wait. I always made him knock: no knock, no food, after the New Testament dictum, "if any would not work, neither should he eat."

"I went into the living room, and there on the feeding station, stood a beautiful herring gull." Photograph by the author.

Often his afternoon visit, usually around four o'clock, would find some friends with us. It was fascinating simply to watch their faces and the play of expressions as this handsome bird would come swooping to the station, and with wings spread wide make a perfect landing even in the strong wind, a sight of breath-taking beauty. Maw has given great pleasure to many people. The window, however, is in need of frequent cleansings, for his anticipatory drooling streaks the window as he knocks.

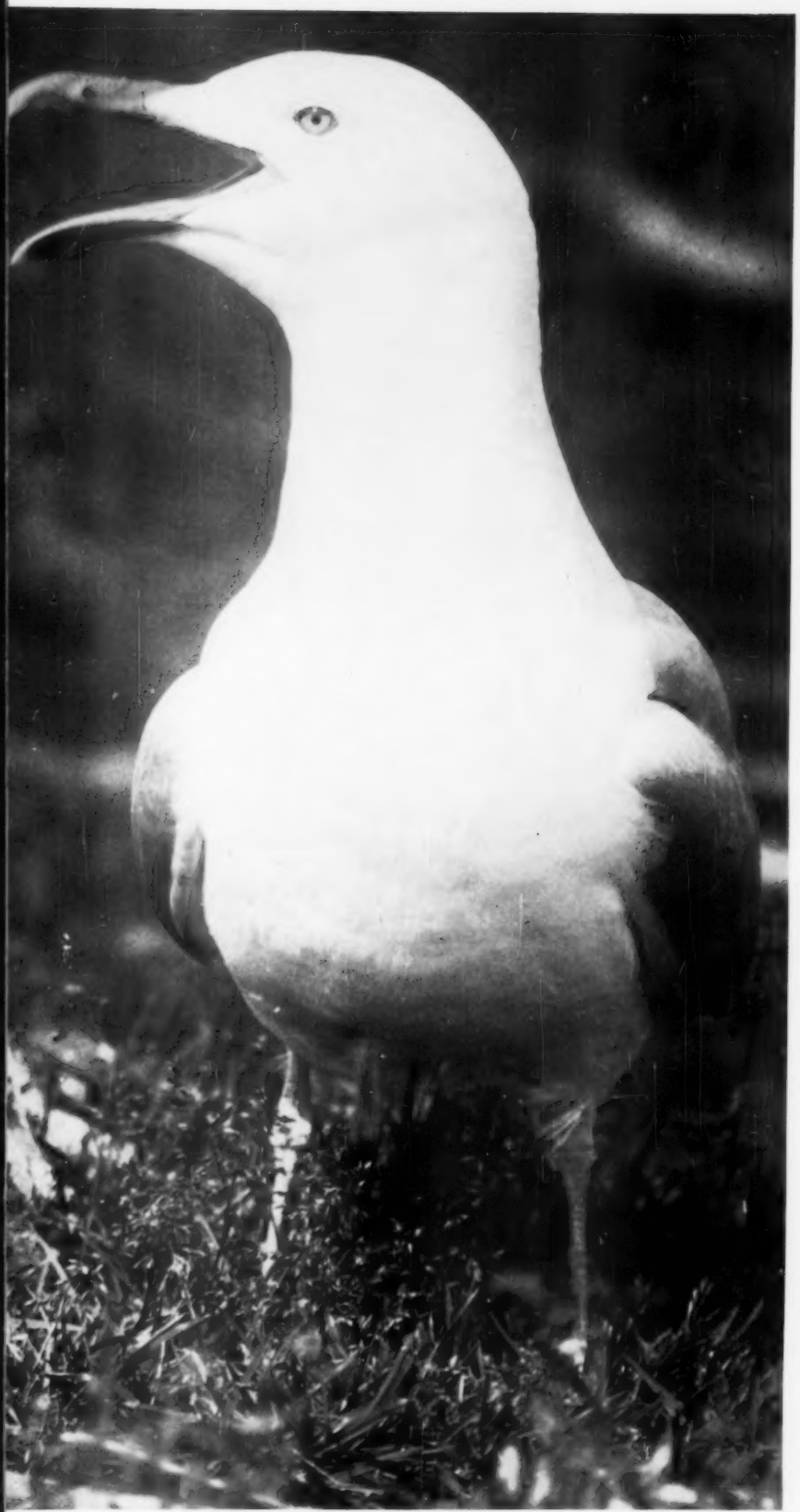
He is a wise bird, and a very wary one. He will land on the flat-top spruce and there take careful account of his surroundings. This may take 10 or 15 minutes. Turning his head in every direction, cocking it to look at the sky above and the sea beneath, he makes sure he is unobserved by another gull or by a crow. Only when he feels certain the coast is clear will he fly to the feeding station, for he wants no other bird to share his secret.

Sometimes as he is about to take off for the food, he will suddenly pull in his neck, try to make himself as small as possible, and call angrily. Sure enough, another gull appears and Old Maw is warning him away. If calling fails of its purpose, off he flies either to attack or to lead away the other gull, until having shaken his rival he returns to finish what he started. At times, however, he fails. One day he was quite perturbed. I looked out and could see no other gull, but Old Maw was not satisfied. Seeming to come to a sudden decision he hurried to the station, seized the doughnut, and away he went. Then I understood his disquiet. For up from under the cliff arose six crows in swift pursuit!

On another occasion he slipped again. He had completed his survey, had knocked at the window, and was waiting on the spruce. I put out his ration and he hurriedly flew to the station, but another gull had seen the morsel and was after it. It was quite a sight to see these two birds winging to the station for the food, one succeeding, the other furious. Which had carried off the prize I did not know at the moment, but an hour later came that insistent knocking, and there stood Old Maw asking for another hand-out.

One day Old Maw appeared, but obviously he was much embarrassed. Following him—haunting him—was a brown baby gull, its crying penetrating and unceasing. Maw's annoyance was unmistakable. He tried every possible dodge to be rid of his whining companion, but to no avail. It occurred to me that I had misnamed him: should it have been old Ma? But I was told that a baby gull will follow either parent. Maw, however, clearly was trying to disown parentage or responsibility. This compromising situation continued for several days. He managed somehow to evade the troublesome youngster, and was his accustomed self again.

* For 22 years, the author was Bishop of the Protestant Episcopal Diocese of Missouri, with headquarters in St. Louis. Now retired, Bishop Scarlett and his wife live in the village of Castine, Maine.—The Editor.



A herring gull utters its alarm call. Photograph by Dr. Alfred O. Gross.

Mrs. Scarlett and I usually break the winter in lovely Castine by going away for a month, though we regret missing a single day of winter beauty here. This year we planned to spend a month in Boston, but Old Maw posed a problem. What would happen to him during our absence? Would he, coming day after day and receiving no answer to his call, become discouraged, decide he had been deserted, and give us up altogether? If this were to be the penalty not even Boston with all its charm and many interests would be worth it. Old Maw's visits we preferred to any vacation: on this we both agreed. Our daughter next door offered to put daily doughnuts on our feeder, and though we had grave doubts as to its effectiveness, we decided to take the chance.

On our return we waited anxiously for the gull to appear. Many gulls would come and go, but only Old Maw consistently used the flat-top spruce for a base: never did he land on any other tree. This ruled out all gulls that did. There was another test: no other gull, as far as we could determine, ever knocked on the window. Though other gulls came to the station, peered into the window and hurriedly seized the food, as though fearful of being caught doing what they should not do, no gull knocked, no gull revealed Old Maw's deliberate purpose nor his self-possession and calm.

Days passed: no Old Maw. We wondered. One thought kept hope alive: would a gull as intelligent as he fail to keep a weather-eye on what had once been an unfailing source of daily bread? Sooner or later he was bound to turn up.

Late in May 1958, just about one year after his first appearance, I was working at my desk. Once again came the knocking summons. I hurried in. There in the window, in all his beauty, stood Old Maw. He looked me full in the eye, a knowing, satisfied glance as though to say, "Well, it is about time you showed up!" Then calmly he flew to the flat-top spruce and waited. I opened the window: "Well, old fellow, glad to see you—glad to see you. Come and get it." Then I hurried to the stairs and called to my wife, "Old Maw is back at last."

That day was a happier one because of his return. —THE END.

A coati in the Huachuca Mountains of Arizona photographed by Alfred M. Bailey and Robert Niedrach.

Coatimundi

During the last 30 years, the coati, a tropical American mammal, has extended its home range northward into southern Arizona and southwestern New Mexico.

By Robert Bruce White*

IN the mountains of southern Arizona and New Mexico where coatimundis are well established members of our native fauna, these odd-looking creatures are called *chulas*—Spanish for jesters, or merry-makers. In Texas where they occasionally wander, its name—less elegant but appropriate—is hog-nosed 'coon, for it is closely related to the raccoon. Across the Rio Grande in Tamaulipas, Mexico, because it is a tough little scrapper, *apache* is its name. And in tropical forests southward to Paraguay you may hear many other sobriquets, *pisote* and *coati-mundi* among them, to designate what is known to science as *Nasua narica*, combining its Tupi-Amer-Indian name with Latin for "nose." By any name coati is an amusing animal—intelligent, industrious, friendly, yet sharp-fanged.

In appearance and temperament coati certainly reminds one of a raccoon, but in habits it seems like a curious mixture of 'coon and monkey, with perhaps a dash of peccary or wild pig thrown in. Muzzle and tail, its principal peculiarities, are longer, more tapered than the 'coon's. And they function in a manner drolly expressing the animal's character.

Its ringed tail, carried erect or tilted forward with a crook at its tip, resembles a furry question-mark, and indicates its inquisitive nature. In the tree-tops this totem or "woodland barberpole," as Ernest Thompson Seton called it, is a dead giveaway of its owner's identity. It climbs trees as nimbly as any monkey, but employs its tail as a balancing pole while occupying narrow perches, or as a brake while making its wildly reckless descents to the ground.

My first introduction to coatis was instructive, and an excellent example of their herd habits. While accompanying a "jungle-survival" instruction team in the rain forest

* Colonel White, a retired officer of the United States Air Forces, has flown in three major wars and has had a successful business life with Standard Oil Company of New Jersey. His articles on nature, a hobby since boyhood, have appeared in many national magazines.
—The Editor.

several miles inland from Albrook Air Force Base, Canal Zone, we discovered a large troop 150 feet or more overhead, enjoying a feast of almendro nuts in one of those forest giants. With binoculars we paused to watch them. At times one would gallop up a main branch, or descend like a mule skidding down a steep trail. Swishing their tails from side to side like perfect little balancing poles, they were as sure-footed as mountain goats, as agile as monkeys. They were all over the tree, and apparently no nuts, not even those in terminal branches, were beyond reach of the youngsters. It was astonishing to see how well all of them maintained their positions on branches seemingly too slender for their support. Quarrelsome though they are on the ground, they were not disputing the right-of-way or ownership of choice nuts; they seemed to be enjoying themselves.

With his machete our instructor now struck the trunk of the tree resoundingly. Until then we had been ignored. The troop had been too busy maintaining their perilous footing and gnawing away, like squirrels, at the sweetish brown fruit. Now there was panic. Several half-chewed nuts fell upon us. And a mad rush downward began so fast I had the impression of a very cascade of animals. Down branches at steep angles they skidded, their tails used almost prehensile-like, curved partly around vine or limb, or pushed tightly against it like a brake. Some ran farther out on the branches, then nimbly transferred to interlacing boughs of neighboring trees. Many came down the main trunk head first, like a squirrel with its hind feet reversed for better clutching. All were so eager to reach the dense undergrowth that no less than a dozen passed within ten feet of me, and I actually counted 30 racing for safety. How many others escaped by other paths I do not know; but we estimated that the troop must have numbered close to 50. Only one fell out of the tree; and being as tough as an almendro nut itself, he scampered away unhurt.

Later, up on the Chagres River, we came upon another troop which, by chance, had the same objective for a succulent dinner as we did, namely iguanas or lizards. Earlier in the week our instructor had visited this area and had spent an intriguing hour watching a solitary male coati climb several trees where iguanas were enjoying their siesta only to find they awoke on his approach, dropped to the ground, and scuttled away to another tree before the hunter could descend. Nothing daunted he would renew his pursuit, knowing sooner or later his perseverance would be rewarded by a fat specimen too sound asleep to elude him. On the eighth attempt coati hit the jackpot. Not only did he catch an iguana but in the same tree raided a bird's nest to provide eggs as well as meat for his dinner.

Amid the rushes along the riverbank was a tall erythrina whose gorgeous red blooms iguanas dearly love. A troop of coatis had arrived just before we did, and the tree was a scene of no little animation. Wisely, the coatis had divided their forces, several going aloft to attack while the rest remained impatiently below to intercept the escape of iguanas in that direction. Result of their strategy: at least four plump iguanas for the little hunters. With the ensuing arguments of the coatis over disposition of the catch, and our intrusion into the fracas, there was nearly as much excitement as when we disturbed the almendro feast.

At Barro Colorado, the beautiful wildlife sanctuary maintained by the Smithsonian Institution in Gatún Lake, I saw a goodly number of coatis. Because they have been protected for 30 years, some are relatively tame and, at almost any time of day, may be found near the laboratory or cook-shack door begging for bananas. Through the years a few have become companionable, affectionate pets. In Frank Chapman's charming books concerning his research at Barro Colorado he tells of Trudy that, reared in captivity, played, fought, and hunted with her master.

"They even slept side by side, Trudy placing her head on the pillow, stretching her legs out to occupy her half of the bed like a well-behaved child." Trudy was always at liberty, but came the day when, answering the call of her kind, she disappeared into the forest never to return. José, another pet, spent the last three years of his life as guest of the camp. Throughout Middle America one often finds coati pets, chained up. These are restless, morose, usually intractable, and quite different from Trudy or the fun-loving animals found free-roving in the forests.

Though there are grayish-brown, reddish-brown, and cinnamon coatis, *Nasua narica*, the subject of this article, ranges from Central America northward to our southwestern states. In habits, character, and structure coatis are much the same. All are from 36 to 44 inches

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At Barro Colorado Island in Gatun Lake, the author saw many coatis. Photograph courtesy of the American Museum of Natural History.

A young mockingbird shows the speckled breast characteristic of the young of this species.

An adult mockingbird comes to the author's drip-pipe water supply to drink.

The Mockingbirds of Kissing Rocks Garden

All photographs by the author

A typical mockingbird perch in Kissing Rocks Garden.

By Frank F. Gander*

FEW birds are more famous for their songs than the mockingbird, *Mimus polyglottos*. Not only does it have beautiful and varied songs which it delivers in clear, ringing tones at all hours of day and night, but it mimics other birds. Some individuals are surpassingly expert in this. I am very fond of the mockingbird, and whenever I have moved into a neighborhood where the species was not established, I have planted berry-producing bushes and provided water, then waited with impatience until a pair of these delightful birds accepted my hospitality.

When I first got the acre where my Kissing Rocks Garden is now established, near Escondido in southern California, it was part of a newly-opened sub-division in what had been an area of brush-covered, low rounded hills drained during winter rains by a system of small gullies. A few mesa blue oaks grow in the lower part of the area, and there my acre is situated. Down hill there is an increasing number of these oaks interspersed with coast liveoaks, culminating, in the valley below, in a nice grove which has been set aside as a county park.

Birds I saw at first were such typical brushland species as the wren-tit, rufous-crowned sparrow, brown towhee, California thrasher, and roadrunner, with frequent visits from such woodland species as the scrub jay, acorn woodpecker, red-shafted flicker, and the plain titmouse. During the winter, western bluebirds, robins, cedar waxwings, and mockingbirds came to feed on the berries on the many bushes of coast manzanita, *Xylococcus bicolor*, and an occasional bush of toyon, *Photinia arbutifolia*. During the winter, some water was often available in small pools in the gullies or in hollows among the rocks, but in summer, the neighborhood was completely without water.

As acres were sold in the subdivision and changes began, changes also took place in the birdlife. Some lots were cleared of brush; then left to grow to grass and weeds. This brought in such field species as lark sparrows, western meadowlarks, horned larks, and even occasional killdeers. House finches, lesser goldfinches, and common goldfinches came to feed on the weed seeds. When houses were built, and plantings of trees and shrubs made around them, dripping garden hydrants insured a regular supply of water whereupon house finches, lesser goldfinches, and mockingbirds became resident in the area.

Mockingbirds wintered in my garden from the time it was first established because a regular supply of water was assured them by a birdbath and a special water drip arranged just for the birds. Usually one mocker controlled the area and let others of its kind come in only to drink and leave again. The one staying with me the winter of 1954-55 was the first to become a regular visitor to the feeding tray under my big oak tree where it fed upon the raisins and currants I provided.

As spring drew near, this bird did no singing so I assumed it to be a female, and this proved correct. It began to seek high perches and call loudly, and a male that had recently started singing farther up the hill became a frequent visitor to my garden. Soon he was singing from all the high perches on the acre, and chasing the female around in what seems to be a typical mockingbird courting procedure. On March 23, I saw the female carrying nesting material into a dense sumac bush on the next acre uphill above mine to the west. This bush was near the place where the winter ranges of these two birds came together.

Though this nest was not close enough for me to watch it carefully, I noticed that in time the parents carried food to the nest. Then the young were out of the nest and I could hear them crying for food in widely scattered places in the brush. Eventually one of these, perhaps the sole survivor, came to my garden and I frequently saw it there. After it was on its own, and was chased by the parents whenever they saw it, every day in late afternoon it would steal in to visit a certain ant hill. There it fed on the winged male and

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* Mr. Gander, a naturalist and nurseryman of Escondido, California, has contributed many articles to *Audubon Magazine*. — The Editor

Insects, without their natural "enemies," would overrun the earth. The author tells us some highlights of

THE CONFLICT

By John R. Clawson*

MAN, used to conflicts and struggles, many of which are of his own making, is familiar with war. Sometimes it seems that all the forces of nature are fighting against him. Yet this is not so, for there is one struggle that goes on about him, in such prodigious numbers as to overwhelm the imagination, that works eternally for his benefit.

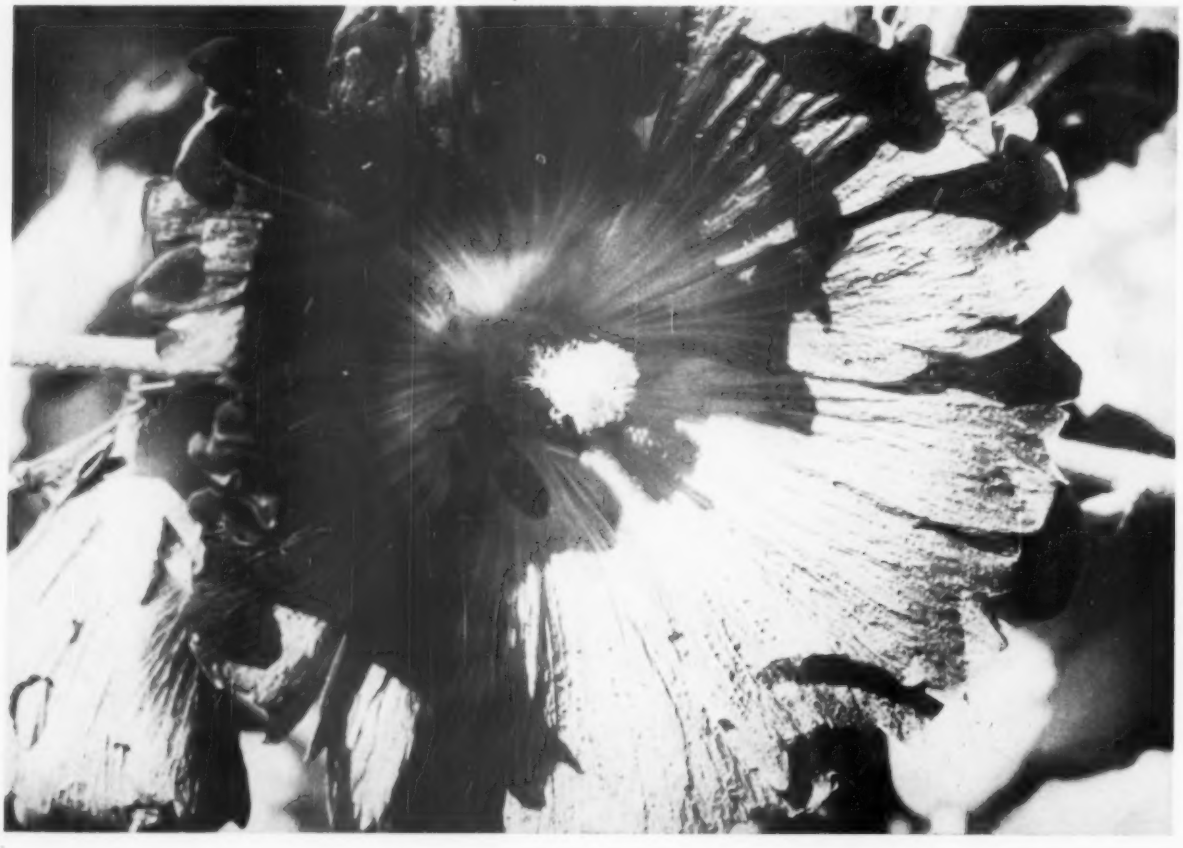
It is a conflict that takes place in the air above us, in the ground below us, in the fields and streams around us. It is the natural preying of one insect on another, and because of the astounding numbers of the participants, it is one that is fraught with potential danger if man interferes too much or too often.

Although many people do not appreciate it, most insects are beneficial to man and they are vitally necessary to all other forms of life on this planet. Nearly a million species of insects have already been classified. Some serve as food for fishes, game, and fowl, and without insects many animals would starve. Some pollinate plants, and without insects these plants could not survive. Some carry germs of decay, or eat at rubble, to clear away the endless filth, debris, and fallen bodies which, without insects, would soon encompass the earth. Some, in their very destruction of plant life, hold undesirable weeds in check to keep them in reasonable number. And still other insects work constantly upon other insects and help to check their numbers by acting as natural predators. Without insects, life would soon perish from the earth.

In her book, "Insect Fact & Folklore," Dr. Lucy W. Clausen of Columbia University, New York City, gives an estimate of one year's possible volume from a single pair of houseflies. From spring until fall, the total number would reach 191,010,000,000,000,000,000. That quintillion figure includes the multiplication by offspring. A single fly mother would produce a total of

* The author, a photographer-naturalist, who lives in Wichita, Kansas, started photographing insects, "as a challenge," in 1948. Mr. Clawson devotes most of each summer to his studies and observations of insects in the field. —The Editor.

Bees, flies, moths, butterflies, and beetles help to cross-pollinate flowers. Most of our fruiting plants and ornamental flowers depend upon the visits of insects for the fertilization of the flowers and subsequent seeds and fruits.



THAT NEVER ENDS

All photographs by the author

only 1,950 eggs, but she is a small producer when compared with a termite queen. The queen termite can spawn a colony of three million individuals. By actual count, one queen laid 7,000 eggs in one day. When another queen was dissected, 48,000 budding eggs were found in her ovaries at the moment of her death.

Gardeners are well familiar with aphids, or plant lice. These miniature creatures are scarcely one-eighth of an inch long and are seemingly weightless. Aphids are found in what appears to be large numbers, but no matter how large the infestation seems to be, it is but the slightest fragment of what could be found under perfect reproduction conditions, and where no "enemies" to check them were on hand.

The female aphid can give birth to living young without the aid or benefit of a male. This is birth by parthenogenesis. In the spring, a female starts to bear living young. Each is a wingless female, which also gives birth to living young. In some species, a female starts the reproduction process even before her own birth—so third generations are often on their way before the second generation is born.

These wingless females almost explode into existence, in fantastic numbers. When they threaten to overrun a single plant, and when the sap supply suddenly becomes scarce, they all start giving birth to winged females. These winged females fly to new plants, where the procession continues to multiply. In the fall, and by some means that entomologists are unable to explain, males are suddenly born along with the females. Although the female can give birth to living young, she cannot reproduce eggs without fertilization from the male. Only eggs can survive the winter.

Variations in the weather help to control insects. The available food supply, or lack of it, is a determining factor. Fishes, mammals, and birds are all active predators, but mainly, the job of insect control is a job done by warring insects. Nature seems to use mammoth numbers to fight mammoth numbers.

Many foes devour the highly prolific aphids. Each aphid eaten nips succeeding generations in a single bite. The ladybird beetle, or lady bug, is a chief control of aphids—both in the gaudy red-and-black larval state, and as a tough-shelled adult. These little beetles devour aphids by the billions, and they are collected in baskets and sacks

The black-winged damselfly when young, or in the nymphal stage, lives underwater where it catches other insects.

A spider captures a woolly caterpillar and drags it slowly up a cement wall.

A robber fly (left) that can subdue prey three or four times its own size is captured by a small spider.

A black widow spider captures a cricket. It has trussed it tightly in its web before feeding on it.

and sold commercially for that purpose. It was their value in aphid control that gave birth to their name. Italian farmers in the Middle Ages recognized their important function. So grateful were the farmers that they dedicated this valuable beetle to The Virgin. The predator became known as, *The Beetle of Our Lady*. The names lady beetle and lady bug naturally followed.

It is an unusual piece of property that doesn't have several ant hills. An ant hill may be the home of 500,000 ants. The ant is a constant threat to termites. Samuel A. Abrahams, vice-president and general manager of Terminix of northern California, was quoted by the United Press as saying, "No one will ever eliminate termites. The best you can do is to control them." He told housewives they should be grateful that ant hordes were around to fight the damaging termites.

The tiny ant is also a check on another insect—the praying mantis. Ants eat mantis egg sacs (each sac contains about 200 eggs) and ants are about the only insect the large mantis seems to fear. A mantis that can kill a black widow spider with ease, will squirm quickly away from the tiniest ant!

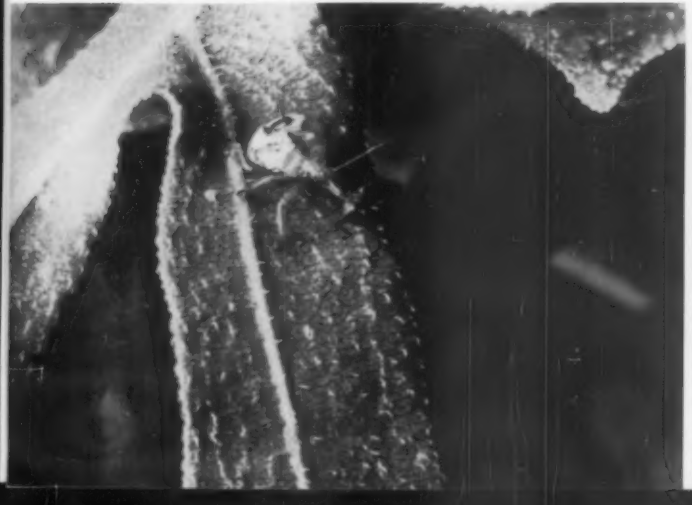
Ants have threats to them, too—among them the buried ant-lions, a larval insect that awaits at the bottom of a conical sandpit it has dug which traps ants and other insects.

Most insects play a helpful role at some time or other. Even the termite is helpful in destroying old wood in our forests – a task that is necessary to the natural functioning of ecological changes in a woodland.

Dragonflies live as voracious nymphs below the surface of the water before emerging as winged fliers. These nymphs propel themselves through the water by exuding water from their bodies from which the oxygen has been extracted. They have jaws fastened on a pair of long, arm-like appendages and each nymph takes a large toll of mosquito larva. When dragonflies emerge as adults, they are colorful, swift-flying creatures. They have as many as 30,000 separate lenses in each compound eye, and their eyesight is superior to most insects—equaled in sharpness, perhaps, only by the swift-flying robber fly.

While driving down a central Kansas road in the summer of 1952, along with other observers, I saw a vast dragonfly migration that was apparently heading for a feeding mecca in the Ozarks. Driving parallel with them, they were clocked traveling at slightly over 40 miles per hour. They were in formation, about one for every cubic yard of air space. The formations could be counted upward to 20 levels, and while they stretched above that, it was impossible to determine how far. The streaming army was seven and one-half miles wide and it flew forward, unbroken, over my observation post, for three and one-half hours. By the most conservative estimate, there were 37 trillion individual insects (or 37 followed by 12

A plant bug has thrust its beak through the body of a snout beetle.



A snout beetle, with its long beak, bores into plants to feed on the juices.

A sphinx moth larva, or tomato "worm," has been destroyed by grubs of a braconid wasp feeding inside its body.

A robber fly, while clinging by one foot to a concrete wall, holds a struggling fly on which it is feeding.

zeroes). The total number of mosquito larva that these migrants might have devoured is awe-inspiring—and beyond human comprehension.

Among the 350,000 different kinds of beetles, there are about 20,000 different species of snout beetles. Each snout beetle attacks a different host plant. Most infamous of the tribe is the cotton boll weevil—and the more cotton plants that abound, the more weevils to feed on it. Other snout beetles, however, attack weeds and undesirable plants. There is a snout beetle that feeds on ragweed, and so on, all helping to keep one plant from overrunning other plants. Some aphids attack only apple trees, while others feed only on cabbage plants.

If certain insects are specialists in plant consumption, so are some of the predator specialists in insect destruction. A wasp thriving only on apple aphids will bypass thousands of cabbage aphids.

The grubs, or larvae, of blister beetles hunt underground. They seek out the egg masses left by grasshoppers and thus destroy many baby hoppers before they are born. The zooming robber fly, on the other hand, attacks prey only in flight. This swift-flying insect looks like an inch-long version of Lindbergh's *Spirit of St. Louis,* for the reason that early airplane designers studied the robber fly as a model for airplanes. Armed with a sharp stiletto-like beak, the robber fly snatches grasshoppers, moths, houseflies, bumblebees, and other insects out of the air. The stiletto is driven home, and a paralyzing fluid injected into their victim by the robber fly, which then alights with its meal, and drains it of its body juices.

Spiders, although they are not insects, are predators that feed on virtually every type of insect. Some use web snares, others depend upon speed afoot. Just as a robber fly can handle a grasshopper three times its size, so a tiny spider can handle a robber fly with ease. The spider, in turn, falls quick prey to certain wasps.

The tachinid flies scatter thousands of tiny black eggs among grass stems. Crawling caterpillars eat them in passing, only to have the eggs hatch inside their bodies like so many time bombs. The tachina, which looks like another kind of housefly to most people, is such a valuable parasite that entomologists hesitate to evaluate its true worth. The 1,400 different species find hosts among moths, butterflies, beetles, grasshoppers, wasps, earwigs, and crane flies. Foreign species have been imported to help control gypsy moths, brown-tail moths, and Japanese beetles.

Of all the warriors in this deadly game of one insect preying on another, the wasp family may be the most valuable family of all. Although adult wasps are almost entirely feeders on flower nectar, they capture billions of live insects to feed to their young larvae. Some species chew their prey and pass it

A grasshopper lays its eggs in the ground. The grubs, or larvae, of blister beetles feed on the eggs of grasshoppers.

Wasps and hornets often catch flies (see fly at right) which they feed to their young in the nest.

on to the babies. Others sting and paralyze their victims, then lay an egg on the immobile, but live body. When the egg hatches, the larval wasp has a store of live food to eat. Caterpillars, wood borers, spiders, cicadas, crickets, plant lice, and brown mites are included in the prey. Some are taken to paper houses built by the wasp, some sealed in mud dens, some buried in underground nests, some stung in their own homes inside tree trunks.

Where a robber fly has a stiletto in the beak, the wasp has a sharp dagger in the tail. A venom, primarily formic acid, is injected along with the sting. Wasp venom is far more powerful than DDT. The Connecticut Agricultural Experiment Station found that one microscopic-sized droplet of wasp venom was sufficient to kill 1,600 caterpillars! According to Dr. Ira La Rivers of the University of Nevada, wasps kill a million Mormon crickets per square mile, per season. Without wasps, these crop-devouring Mormon crickets could overwhelm the earth.

The oriental fruit moth is a serious threat to fruit crops such as peach, apricot, and plum. Insecticidal sprays are ineffective because the larvae feed inside the twigs, so wasp predators are bred and sold to war on the caterpillars of the fruit moth.* California insectaries at Riverside and Berkeley incubate and distribute millions of wasps a year. They are sent out in paper bags, 2,500 at a time. Along the East Coast, braconid wasps control 80 per cent of the oriental fruit moths.

Because most people notice insects only during large infestations, and because the general public fears almost every insect except butterflies, Americans have been quick to accept chemical insecticides. Householders spray insects that plague them without knowledge or appreciation of the billions that have been destroyed by natural enemies. Many entomologists warn that the over-use of chemical insecticides poses a great potential danger. House and garden spraying are all right, and so is the elimination of certain breeding areas of certain so-called pest insects, but poison that kills by thousands, may eliminate active insect allies that kill by billions.

For example, a farmer too quick to plow up and spread poison for possible cutworms that damage his crops, may kill instead, the larvae of blister beetles, and thus leave himself vulnerable to a new plague of grasshoppers whose eggs are buried in the same soil. A spray that kills houseflies, can also wipe out the tachinid flies in the meadow, and pave the way for a major infestation of caterpillars later on, if the spraying is spread to open fields. In fighting bagworms, wasps gathering nest material from the same trees, sometimes become the poison victims. Thus an important natural enemy of caterpillars and of other plant-eating insects may be destroyed.

Huge volume spraying gains quick acceptance because many people dislike insects on general principles. Recently a small city in the Midwest sent voters to the polls to decide if their town should have wholesale spraying that would kill all insects flying in the air. The town, as might be expected, voted 40 to 1 in favor of the plan. Those few who voted against it were no doubt thinking of financial objections rather than the possible consequences. Killing mosquitoes and houseflies is fine, but destroying wasps, robber flies, ladybird beetles, and other insects that act as natural controls is quite another matter.

Dr. John L. George, formerly Associate Curator of Mammals of the New York Zoological Park, was quoted in a report to the New York Zoological Society as saying that in 1946 there was, at that time, one insect of "public health importance" which had become resistant to insecticides. Thirty-six kinds had become resistant by 1956.

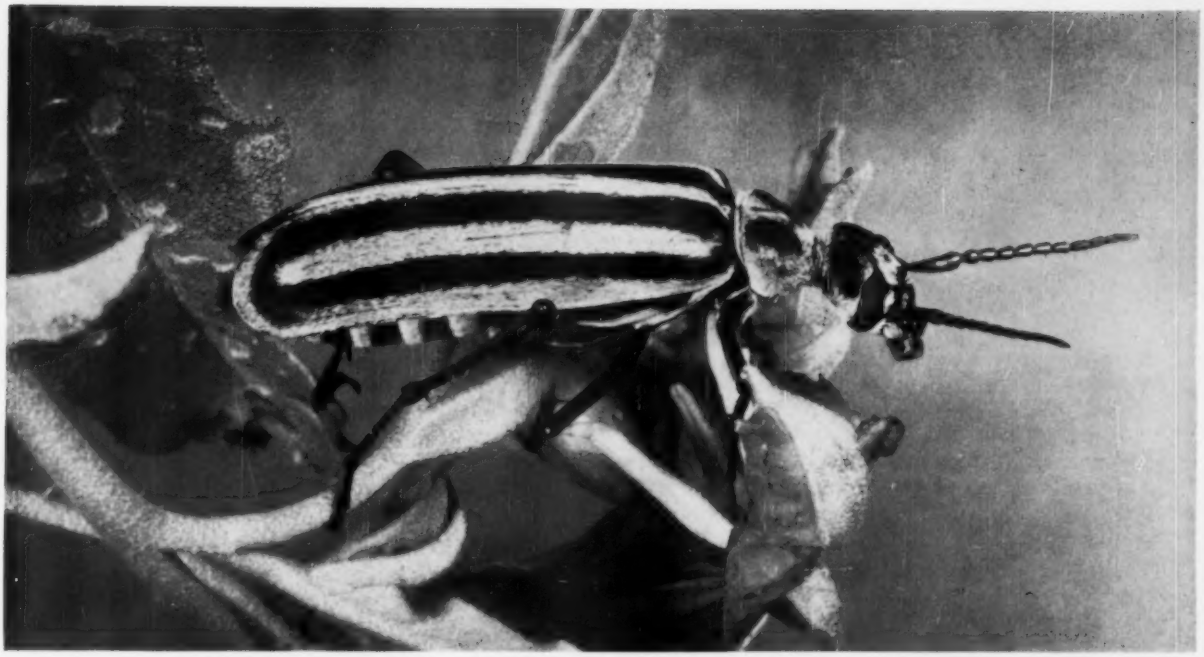
Perhaps in line with this thinking, the Thompson Chemicals Corporation of Los Angeles and St. Louis, withdrew from the manufacture of broad spectrum insecticides until more facts have been made known. A 12-year study convinced this company that there is danger in using broad spectrum insecticides that kill friend insects and birds along with the foes. This move was hailed by conservation spokesmen—including the National Audubon Society.

Although biologists and entomologists have warned of the danger in killing "friend" insects, with the net result of leaving "pest" insects to multiply without competition from their foes, many people who talk constantly of the danger of dropping one "man-controlled" atomic bomb, refuse to give any consideration to nature's warriors that have fought a constant "containing" battle for centuries.

Science News Letter reported a recent experiment in California. A grove of avocado trees was divided in half, in a fight against brown mites. The first half of the trees were sprayed with DDT. The second half were left to natural ladybug predators. After the DDT treatment, instead of decreasing, the brown mites developed to serious proportions. More beetles succumbed, and the remaining mites developed rapidly. On the untreated trees, however, there was no serious infestation for the ladybird beetles kept the brown mites in normal numbers. On one untreated tree, alone, 1,400 hard-working ladybird beetles were picked off in an "actual count" test. Clearly this was a major victory of insect over insecticide.

Insecticides can be used inside the home without a threat to "useful" insects. There are also some insect "pests" that have few or no natural controls, and chemicals may become necessary to contain them. There are many sides to the question, but certainly man should consider other methods than mass insecticidal spraying which destroys the working processes of nature. —THE END

* A native braconid wasp, *Macrocentrus ancylivorus*, frequently attacks the introduced oriental fruit moth. In New Jersey and Delaware, fruit injury by the oriental fruit moth in orchards was reduced as much as 80 per cent because of the control exerted by this native braconid wasp. Of the braconid wasp parasites *(Macracentrus)*, Dr. A. W. A. Brown says: "The oriental peach moth *(Grapholitha molesta)* in some areas of the United States is adequately controlled by *Macrocentrus* parasites; the application of DDT would jeopardize their existence, although frequently a high *Macrocentrus* population has been found to survive a DDT schedule." From "Insect Control by Chemicals." (p. 659) by A. W. A. Brown, John Wiley and Sons, Inc., New York, (1951). — The Editor.



Adult blister beetle, photographed by G. M. Bradt. Although the triungulins, or primary larvae of some kinds of blister beetles feed upon the eggs of grasshoppers, others may attach themselves to the legs or body hairs of bees. After the bee returns to the hive, or nest, the hitch-hiking young blister beetle may feed on the eggs and young larvae of the bee or its honey supply. Adult blister beetles are eaten by magpies and about 50 other species of birds.

★ ★ ★ NATURE IN THE NEWS ★ ★ ★

Reprinted from The New York Times, *June 6, 1959*

Hawaii Fosters War of Insects

'Good' Types Are Imported to Do Battle With Those Injurious to Crops

HONOLULU, June 6—Hawaii has been fostering for at least fifty years one type of warfare, that between good insects and bad insects.

The good insects have been brought in from all over the world to do battle against the harmful insects that, in the main, have come uninvited, by ship and plane.

Although the bad insects are the chief object of the attack, the good insects are also used to combat other pests, including other forms of animal life and plants that are injurious to crops.

Last week, for instance, the Territorial Board of Agriculture and Forestry unpacked a shipment of Carabid beetles from Fukuoka, Japan. The beetles feed on giant African snails, an islands pest.

Biological control of insects and plant pests is much less expensive in Hawaii than chemical control, according to Alan D. Thistle, director of the Territorial Division of Entomology and Marketing. He said that the results spoke for themselves.

"Hawaii has attained more success in biological control than any other community in the world," he declared. "Hawaii's sugar industry is unique in that all enemies of sugar cane present in the territory have been brought under control through the introduction and establishment of the pests' natural enemies."

The long warfare has brought victories, defeats and a number of stalemates. A recent apparent success is control of lantana camara, a plant pest of island rangelands, through the importation of two moths, Hypena jussalis from East Africa, and Syngamia haemorrhoidalis, from Florida and Cuba.

Insects that have been enlisted in the warfare also include the following:

Parasites to combat the Oriental and Mediterranean fruit flies, a stem-borer to control emex, a predaceous beetle from Africa to control the army worm; parasites that attack scales, mealy bugs and aphids, beetles from Trinidad to attack coconut and banana beetles.

Under the supervision of Q. C. Chock, territorial entomologist, imported insects are placed in quarantine and subjected to exacting feeding tests to make sure they will attack nothing but harmful insects or plants.

Beneficial insects raised in Hawaii have been shipped all over the world. The territory has sent fruit fly parasites to Mexico, Okinawa, Mauritius and Israel, army worm parasites to Fiji and lantana-feeding moths to Australia.

Many of the "good" insects have been collected by Noel L. H. Krauss, exploratory entomologist of the Territorial Board of Agriculture, and shipped in. His quests, which began in 1935, have taken him to every continent.

Mr. Krauss has also selected insects to aid other areas.

In 1951 he collected black parasitical wasps to be sent to Palau Island in the South Pacific to fight the rhinoceros coconut beetle. He enlisted native boys to find specimens for him.

For the transportation of the wasps great care was needed.

"I hired a carpenter and a tinsmith to make cages out of five-gallon cans," Mr. Krauss related. "The insects had to be packed carefully and provided with food and water so they would arrive in good condition."

BIRD FINDING WITH *Sewall Pettingill*

WHERE TO GO
WHEN TO GO
WHAT TO SEE

YELLOWSTONE IN WINTER

Yellowstone National Park can now be visited in the winter by anyone, as a trip by snowmobile is available. If you are one who likes to do the out-of-the-ordinary without undue risk, who likes to penetrate the snowy wilderness without personal discomfort, then you will be interested in what I have learned from Barbara Hammond, one of my former students who lives in Montana. She has taken this unusual jaunt and declares it to be an experience that should not be missed.

The "Snowmobiles of West Yellowstone," as they are called, proceed from the town of West Yellowstone, Montana, through the park's west entrance to Old Faithful Geyser and return. The round trip, which takes seven hours, begins at 9:00 a.m. The vehicles are heated and a sack lunch is provided.

The route to Old Faithful parallels the Madison and Firehole Rivers. Fed by hot springs and geyser run-offs, they are never closed by ice. Consequently, they remain attractive to waterfowl even during the coldest months. Besides a few trumpeter swans that are within 15 to 20 feet of the road, you can see Canada geese and as many as a dozen different kinds of ducks—canvasbacks, buffleheads, green-winged teals, and so on. Other wildlife to be viewed along the way are bison herds, hundreds of elk, and many coyotes. At Old Faithful, where you have lunch and wait for Old Faithful to erupt, mule deer will feed from your hand. Of course, Yellowstone's famous black bear population is in hibernation, but usually the driver knows where a few individuals are holed in and will point out the spots—just in case you are interested. By chance you may get glimpses of northern shrikes, gray jays, and such conspicuous fringillids as pine and evening grosbeaks, but you cannot expect to see many small birds. The chief reason is that the snowmobile, in order to make the round trip in a day, has to keep moving, except for a few stops to see waterfowl and big game. So you have little opportunity for actual searching.

In addition to Old Faithful, the trip takes in hot springs and other thermal features whose actions are even more impressive in the winter. Because of the lower air temperature, their steam is much more voluminous. Old Faithful itself spouts to a greater height. (Hardly discernible is the smell of sulphur which is usually so characteristic of the geyser basins during warm weather.) Curious icy formations crowd close to the springs and steam vents; the trees nearest the openings become encased in ice from condensing steam, which create strange formations, some utterly weird, some amazingly beautiful.

There are several available snowmobiles, each of which will accommodate ten people comfortably. A trip will be made with as few as three adults. Charges are $15.00 per adult, half fare for children. The Stagecoach Inn in West Yellowstone has excellent meals and rooms at off-season rates ($7.50 for a double room with bath). Reservations for trips and rooms at the inn should be made in advance (especially for week-ends) by writing directly to the Stagecoach Inn, Box 358, West Yellowstone, Montana.

You should plan to stay at the inn the night before and the night after the trip. Time will not be heavy on your hands as this is a winter sports center, with skiers around. In the evenings you can take dogsled, horse-drawn cutter, and horse-drawn bobsled rides, and do a little ice-skating. Within eight miles of West Yellowstone is a ski lift where you can ride to the top of the Continental Divide and, if the day is clear, see Old Faithful 32 miles away.

The snowmobile trips generally begin in late November and run until mid-March, *depending on the snow cover*. Too little or too much

snow may prohibit the trips. If the snow is sparse, the snowmobiles cannot operate, because they run on half-track tread; if it is too deep, they cannot go fast enough to make the round trip in a day. Since there are no overnight accommodations in the park during the winter, the snowmobiles must return the day they depart. Before going to West Yellowstone, you will be wise to check on snow conditions. The snow is almost always of suitable depth in January and February.

Roads into West Yellowstone are kept open to travel through the winter. If you do not want to come by car, there are other ways of reaching West Yellowstone: by rail to Ashton, Idaho (60 miles away), or to Three Forks, Montana (128 miles); or by air to Idaho Falls (119 miles). Then by bus, which runs to West Yellowstone daily, from Ashton and from Bozeman, Montana.

BIG BEND IN WINTER

My western guide has much to say about bird finding in Big Bend National Park, Texas, in the late spring and summer. What about opportunities in winter? After all, here is a vast area (our fifth largest national park) open to the public the year round, even in mid-winter. My answer is that there are indeed opportunities—and I speak from personal experience. But first, a few words about the park itself.

If you are like most of my friends, you know very little about this great preserve. You have not bothered to visit it because it is in southwestern Texas, on the Rio Grande, definitely out of your way. And because it is fairly new to the park system (established in 1944), you have not heard much about it. It takes time for a natural area to acquire the fame and appeal of a Yellowstone or a Yosemite.

I cannot say enough in praise of Big Bend Park. Certainly it embraces some of the most spectacular topography I have ever seen in the United States. Its most commanding feature is the Chisos Mountains.* Though photographs have recorded some of their tremendous buttresses, towers, spires, "mule's ears," and other erosive formations, they have failed, I find, to portray their massiveness and dizzy heights. You can climb via a paved highway to "the Basin" high in the Chisos. The elevation you reach—a little over 5,000 feet—is no less impressive than what you see along the way—incomparable sweeps of the southwestern landscape on the one hand and cliffs that seem to bear down upon you on the other. As for color in the scenery, nowhere else have I seen the reds more brilliant and the purples more lush than those of Mexico's Sierra del Carmen which you see in a late afternoon across the Rio Grande.

My wife and I recently visited the park in January, stopping in the Basin. We were surprised to find it blanketed with snow—"unusual," we were told. Some changes and improvements were noted. Park headquarters have been moved to Panther Junction, where there is a store for supplies and a service station. The Basin is now in sole charge of a concessioner who operates moderately-priced, attractive stone cottages and wooden cabins (housekeeping units no longer available), a restaurant (food plain and substantial), a book and souvenir shop, and a service station. Several of the cottages, notably 23 and 24, overlook "the Window," which provides a lovely vista of the lower desert many miles away. Ask for one of these cottages when making your reservations. The address is now Big Bend National Park, Texas. (Mail comes three times a week, instead of once a week as formerly.)

Despite the snow in the Basin we observed quite a few birds—for example, scaled quail, ladder-backed woodpeckers, black-crested titmice, cactus wrens, pyrrhuloxias, and brown towhees. Mexican jays, very tame, came to our porch for food, but neither here nor elsewhere in the park did we find marked concentrations of species. Most of the birds we came upon were those that would be there in any season. Surprisingly, few northern species were represented. Our greatest disappointment was failing to see any birds of prey other than a lone turkey vulture.

We spent three days in Big Bend, and they were full ones. With warm, sunny weather and the able leadership of Richard D. Porter, a graduate student from Texas A. and M. College, who was conducting research on mammals, we explored Hot Springs (now closed to the public but nonetheless open to anyone interested in birds), the mouths of Santa Elena and Bougillas Canyons, and the thickets bordering the new Bougillas Campground along the Rio Grande. Situated at lower elevations with no snow, all of these places were productive of such birds as black phoebes, verdins, ruby-crowned kinglets, rock wrens, curve-billed thrashers, green-tailed towhees, and white-crowned sparrows.

In summary, bird-finding opportunities in winter are best in the vicinity of canyon mouths and along stream beds where trees and shrubs grow in sufficient numbers to form extensive thickets. At this season of the year, the weather is pleasantly warm. In the summer, these areas are unbearably hot and generally unproductive of birds as compared to the higher elevations of the Chisos which are more enjoyable weatherwise and attractive to such summer residents as the Colima warbler. The Basin is a good place in any season but, owing to its being ringed by cliffs, it is inclined to hold an excessive amount of the sun's heat during the late spring and summer; thus it is more enjoyable, in so far as one's living is concerned, in the cooler months.

For one interested in botany, Big Bend Park offers a stellar opportunity in any season. Taking in as it does over 700,000 acres of the Southwest from deserts to mountain tops, plants range from creosote bush and ocotillo to Douglas fir and ponderosa pine. This altitudinal succession of species becomes quickly apparent as you ascend by car from Persimmon Gap (just within the park's northernmost entrance) to the Basin. Among the scores of plants are sotol, Spanish dagger, lechuguilla, allthorn, and cacti—pricklypear, cholla, tasajillo, and pitaya. Can you recognize them? If not, you can purchase for $1.00 at the Basin (or from the U. S. Government Printing Office) a 200-page book, "Plants of Big Bend National Park," by W. B. McDougall and Omer E. Sperry. Its nontechnical keys and fine photographs will give you the assistance needed to identify these plants.

Continued on page 179

* For an interesting illustrated article about Big Bend National Park, see *"The Colima Warbler of the Big Bend,"* by Alexander Sprunt, Jr., *Audubon Magazine*, March-April 1950.
—The Editor.

The Decline of Birds in 1958

(As many of our readers know, Audubon Magazine *has a companion journal,* Audubon Field Notes. *This second periodical publishes outstanding records of birds contributed by hundreds of ornithologists scattered all over the United States and Canada. At the end of each season, editors in each of the 19 regions into which the continent has been subdivided evaluate the items received and comment on their meaning in terms of regional trends. In addition, each issue is prefaced by a general summary that reviews the content of the issue from the national point of view. Certain of the news that filtered through this chain of selection in 1958 was so alarming that we are reprinting here a condensation of the final national summary for the year. The original text, which was prepared by Dr. Robert J. Newman of Louisiana State University, appeared in the February 1959 issue of* Audubon Field Notes.)

"THERE were times in the past 11 months of 1958 when some of us learned what it would be like to live in a world entirely without birds. They were times measured not just in minutes or hours but in days and weeks, and their almost eerie emptiness was the extreme expression of a series of reported developments that caused 1958 to stand out, above all the previous years treated in *Audubon Field Notes,* as the Year of Disaster . . . to feel the full impact of the events of 1958, and to appreciate their unique continuity, one should review them at a single sitting. So let us glance briefly backward over the whole year.

"A cold front that arrived in the already chilled state of Florida on New Year's Day (1958) set the pattern for the rest of the winter—abnormally low temperatures in the eastern half of the nation, with departures from normal most severe in the southeastern portion. As the result of these conditions, eastern regional accounts of that period reported 20 kinds of birds found dead or dying. The list included iced-in grebes, oiled dovekies, and starved saw-whet and boreal owls, but was made up mostly of insectivorous or semi-insectivorous southern winter residents. The only birds for which an actually observed mortality of more than 100 individuals was either stated or strongly implied were the tree swallow, robin, and myrtle warbler; but the accounts left the impression that the grand total for all species was in the neighborhood of two or three thousand birds, the bulk of them in the South Atlantic States and Florida.

"Evidence soon accumulated that this record kill, though no greater than that known at a single TV tower on a single night, had far more sinister significance. Birds became harder and harder to find—not just those for which losses had been directly established but a host of others as well, and not just in the Southeast but in nearly all the regions east of the Great Plains. Parts of the North became barren of birdlife.

"As the bitter late winter (of 1958) gave way slowly to a belated eastern spring, the alarming roster of species found in less than normal numbers rapidly acquired new entries, until by April's end it had nearly doubled! It now became apparent that a ranking of 'disaster species' from the viewpoint of ordinary field observation would bear little resemblance to the earlier ranking based on directly documented mortality. Now the eastern bluebird, eastern phoebe, house wren, and hermit thrush emerged as the four birds most conspicuously and most widely affected; and of these only the bluebird had even been mentioned in the long list of published casualties. While the new species regarding which we had misgivings were still mostly insectivores that winter extensively in the United States, a fairly large number of migrants returning from the tropics also became implicated. For the apparent decreases of these, new explanations were sought. These were variously constructed from four hypothetical main factors: (1) the destruction of migrants over the Gulf of Mexico during the storms of mid-April (partly confirmed by an unpublished observation from the M/V Oregon of night migrants falling into the sea): (2) the failure of tropical air to provide birds with the usual assistance in their movements northward: (3) an insufficient food supply to sustain migrants in the areas traversed; (4) the hit-and-miss quality of observation and the ability of transients to vault over whole districts unseen. And from New England and Long Island came suggestion and limited evidence of a fifth factor, the direct poisoning of the birds themselves by pesticides.

"In the breeding season, when bird populations stand still to be counted, our earlier worries about them frequently prove to have been groundless. But the reports in the extensively cool and wet summer of 1958 tended to enlarge rather than dissipate the fears held over from spring. A rough index to the seriousness of the situation, as seen by observers, is provided by the number of regional accounts from east of the Plains that mentioned notable shortages of a given species. For the leading 'disaster species' of the preceding period, the summer standings were: eastern bluebird, 9 out of the possible 10 reports: eastern phoebe and house wren, each 4; hermit thrush, 3. . . .

"It is interesting to see what happens when we totalize the ratings for two separate groups of species: (A) migrants that winter chiefly in the southern United States; (B) migrants that winter chiefly south of the United States. The results are 38 points for Group A, the species heavily exposed to the effects of the hard winter, and 48 points for Group B, the species only slightly exposed to those effects. There is more than one reason why such a comparison is misleading, but it at least indicates that the commentators who had felt the need for something else in addition to the winter weather to explain the decline in birds were probably right. The 'something else' that received the most increased emphasis during the summer was the outdoor use of insecticides in general, with attention centered on the campaign in the South to eradicate the fire ant.

"Most of the information on which the summarization up to this point has been based was broad in geographic outlook but indefinite numerically. In the next issue, the TWENTY-SECOND BREEDING BIRD CENSUS (*Audubon Field*

Notes, Vol. 12, No. 6, December 1958) brought us a means of evaluation in which the former elements of advantage and disadvantage were reversed—data definite numerically but narrow in scope. Here the spotlight of comment was focused on shortages of the magnolia warbler, rufous-sided towhee, eastern wood pewee, Blackburnian warbler, ovenbird, veery, and slate-colored junco —species that had previously seemed little more than 'extras' in the cast of disaster species.

"In the autumn accounts (of this issue of *Audubon Field Notes*), bird scarcities continue to compel attention in the East. Henry M. Stevenson contributes a painstaking mathematical analysis of bird losses in Florida; Maurice Brooks in his valedictory, brings us the shocking climax to his year-long story of deterioration in the Appalachians; and the Central Southern summary adds an almost incredible touch—the virtual disappearance of all birds from places in the Deep South that ordinarily teem with activity in autumn. And by actual count the list of birds showing signs of decrease somewhere, sometime in 1958 has risen to include *more than half the common or fairly common species that occur in the eastern United States!* . . .

"A *Numerical Test of Population Change.*—In view of the uncertain significance of verbal estimates, it may be worth while to look more closely at the Twenty-Second Breeding-Bird Census, which permits more objective judgments. Twenty tracts in the East were recensused in 1958. Only *two* of these recorded a rise in the number of singing males, and the overall reduction amounted to 18 per cent. The table . . . gives individual returns for the most publicized disaster species adequately represented in the census and includes additional cases for comparison. The column headings have these meanings: *Areas*, the total number of tracts reporting the species either in 1958 or the last prior year of census; *Losses*, the number of tracts on which the number of singing males declined in 1958. Under *Class*, S is the status of the species as an insectivorous or semi-insectivorous migrant wintering mainly in the southern United States, T is an insectivorous or semi-insectivorous migrant wintering mainly in the tropics, G is a predominantly granivorous or seed-eating bird; % (per cent), the total number of singing males in 1958 expressed as a percentage of the total for the same tracts in the last prior year of census. Percentages below 100 imply a population decrease; above 100, an increase.

Species	*Areas*	*Losses*	*Class*	%
Eastern Bluebird	4	3	S	31
Hermit Thrush	5	4	S	35
Eastern Phoebe	6	6	S	42
Swainson's Thrush	4	4	T	47
Magnolia Warbler	4	3	T	49
House Wren	6	6	S	50
Ovenbird	10	9	T	63
Slate-colored Junco	5	3	G	66
Black-and-white Warbler	5	4	T	67
Rufous-sided Towhee	11	5	G	68
Cardinal	13	7	G	74
Robin	17	10	S	76
Downy Woodpecker	11	6	—	78
Blackburnian Warbler	5	3	T	78
Veery	7	5	T	82
Eastern Wood Pewee	15	8	T	82
Scarlet Tanager	9	5	T	86
Catbird	11	4	T	87
Great Crested Flycatcher	8	4	T	87
Song Sparrow	11	4	G	95
Carolina Chickadee	10	2	—	98
Red-eyed Vireo	16	6	T	99
Indigo Bunting	10	3	G	112
Starling	9	2	—	131
Blue-gray Gnatcatcher	8	3	S	133

"Note that the table confirms the earlier conclusions of observers by ranking three insectivorous southern winter visitants—eastern bluebird, eastern phoebe, hermit thrush —as the foremost disaster species. However, it also places four tropically wintering insectivores and two noninsectivores among its top ten. . . ." THE END

BIRD FINDING WITH SEWALL PETTINGILL — *Continued from page 177*

CHEYENNE MOUNTAIN ZOO IN COLORADO

I rarely pass up the chance to visit a good zoo, for it invariably has something that I have not seen alive or something that is quite unexpected. I admit frankly that I get almost as great a kick out of a visit as I do searching for wild birds, and I find it a lot easier.

Last spring I was taken by surprise on visiting the Cheyenne Mountain Zoo. The truth is, I did not know about it until I was in Colorado Springs for a lecture. My hosts, sensing this ignorance, insisted that I see it. Just about the last word in a modern zoo, they said. And they were right!

Situated dramatically on Cheyenne Mountain, overlooking Colorado Springs from an elevation of 6,800 feet, the zoo is no doubt the highest in America. But what gives it notable distinction is the zoo itself, its ultra-modern, absolutely spotless and odorless pits, pens, cages, and houses, its exotic collection of birds, mammals, and reptiles, carefully chosen for interesting variety and human appeal, and the healthy, contented appearance of all the animals. I was not only surprised to find penguins (high on a mountain, of all places!), but to see them actually looking happy. Their cage was spacious, air-conditioned, and equipped with a pool of crystal-clear water from a mountain spring. The principal birdhouse featured a huge, cageless exhibit of tropical birds in a cluster of live trees and shrubs. The total effect was both realistic and exciting. —THE END

Attracting Birds

Bird Attracting in the Pacific Northwest

By John V. Dennis

(Part I)

UNTIL recently the birdlife of the Pacific Northwest was unknown to me. To make up for this deficiency, a motor trip that would take me there at a season when I would not only see as many distinctive birds of the region as possible but also certain of the birds I had missed on other trips west seemed a "must." Everything pointed to a trip in late fall; plenty of birds including winter visitors, and yet not enough snow in the mountain passes to hinder travel or, at least, so I hoped.

Taking a northern route, I found much of interest in the birdlife of Montana and Idaho, but local specialties eluded me until I reached Seattle, Washington, within 100 miles of the Pacific Ocean. Now the real search began. I was interested not only in seeing such birds of regional interest as the band-tailed pigeon, varied thrush, and chestnut-backed chickadee, but I wanted to see how the impact of recent civilization had affected birdlife. Was there the same trend of birds to visiting feeding stations as in other parts of the country? Had birds become used to life in towns and cities, and did the human inhabitants do as much to encourage them as elsewhere?

While the Northwest has known settlement for well over a hundred years, the vastness of its forests and its rugged mountains even today reflects the unspoiled wilderness. Contrasts in geography are as markedly different here as in any part of the West. Motorists driving westward through Washington or Oregon, I am sure, must be as startled as I was over the contrast between the wheat fields and sage brush of eastern and central portions and the magnificent splendor of the Cascade Range and Columbia River gorges farther west. An even more striking contrast awaited me when, without difficulty, after driving the snow-filled passes of the Cascades in Washington in late November, the road took me precipitously downward into an ever greener countryside. On reaching Seattle the lawns seemed almost too green to be true and many flowers were still in bloom. Here I was in the same latitude as St. Johns, Newfoundland, yet enjoying spring-like warmth.

Some of the first birds I saw seemed more representative of spring than winter. In open fields and lots I saw mourning doves, red-winged blackbirds, and meadowlarks. In city yards there were towhees and song sparrows. Flickers foraged on the many green lawns and robins that I would normally have expected on the lawns were in trees overhead by the hundreds.

The explanation for such a topsy-turvy state of affairs, climatically, lay in the Japanese current offshore in the Pacific Ocean, whose warm waters make for mild winters near the coast. The influence of the Pacific Ocean makes itself felt the year around in an equable climate and in generally humid conditions. For this reason it wasn't surprising to find that many birds here tend to winter much farther north than the same species do in the East.

While a first impression of the birdlife suggested that it wasn't so different from that in the Northeast (waterfowl, shorebirds, and hawks seemed even more similar than the landbirds), I was soon catching on to differences in size and color that designate separate races or subspecies. And it wasn't long before I was seeing a number of birds that were strikingly different from those familiar to me in the East.

In the capable hands of Webster H. Ransom, Walter Hagenstein, and Ward Beecher, local experts who lived in the

attractive suburb of Bellevue, I pinned down many new birds, and at their homes, got an insight into bird attracting methods of the area.

My friends had gone to more pains than is usual in providing food for birds. The mainstay at each feeder was a mixture containing beef suet (50%), yellow corn meal (25%), and peanut butter (25%). In preparing the mixture the suet is slowly rendered over the stove with care not to scorch and the other ingredients carefully mixed in. Canary seeds, raisins, and nutmeats were sometimes added. The mixture is poured into empty quart cardboard milk cartons. After hardening, the cartons are placed horizontally upon the feeder after being cut off at both ends. The wax-coated container not only serves as a convenient holder but helps protect the contents from weathering. Mr. Ransom usually cut his cartons into blocks about four-inches long, and he impaled them upon nails sticking upward from the feeding shelf. This latter precaution was to make it more difficult for the container and its contents to be blown away or otherwise removed.

Other bird foods were used, too, but every precaution was taken to serve them in such a way that the food would not spoil. In the damp climate of the region, foods may spoil quickly and make it unhealthy for the birds eating them. Bread is particularly unsafe to offer birds unless it is in small amounts that will be promptly eaten.

Mr. Beecher's elaborate feeding setup gave me an opportunity to see my first chestnut-backed chickadees. We in the East who know our chickadees only in rather dull dress have something to envy in the more brightly-colored chickadees in other parts of the world. The chestnut-backed chickadee of the Northwest is the most colorful New World member of the family. Except for vivid chestnut on its sides and back, it is quite similar to the familiar black-capped chickadee. In actions it seems, if possible, even more alert and energetic. Both black-capped and chestnut-backed were at the feeders where I could compare them. It was obvious that the chestnut-backed was somewhat the smaller of the two. Both seemed to get along in a friendly manner, but Mr. Beecher said that for nearly a year they had remained aloof from each other, the one chickadee feeding on one side of the house and the other on the opposite side.

I had been looking for the band-tailed pigeon in every park in Seattle. At this season they frequented various berry-bearing trees and shrubs. Their special fondness was for the red berries of the madrona tree (*Arbutus menziesii*). A large picturesque tree of the Pacific Coast with reddish bark and shining green leaves, the madrona grows in many yards and parks of Seattle. Yet, wherever I searched the trees for band-tailed pigeons, I found only large flocks of robins, which had apparently forsaken the lawns for the red berries.

When I joined my friends at Bellevue, which is east of Seattle across beautiful Lake Washington, I told them of my search. They assured me that I could find plenty of these pigeons in the tall evergreens that abounded in the area or even down on lawns and near houses. As we searched the region it seemed that we were always just too late for this flock or that one. Whether it was accident or habit, the birds had an annoying way of moving on just before we came into sight.

(*To be continued in the next issue*)

A PROTEST AGAINST SPRAYING

Continued from page 153

adaptation, balance, and controlling relationships.

I would not, though I have studied the science of living things all my life, urge the extinction of a single organism from the countryside around me. I do not have the knowledge to predict the consequences of such a sentence upon the world at large. Nor do I feel I have the moral right to make such decisions.

I have little doubt that by raining death upon a country of defenseless and unsuspecting living things we have committed a crime. I know that it decreases my small freedoms even further. I am certain that in the system that is nature, we shall find that we cannot pick and choose among the creations, according to human comfort and whimsy. I know we shall be the poorer and the closer to slavery for this thundering monster with its cloud of poison spray that sends my dog and me cowering into the house.

ALFRED G. ETTER
1310 Abbott Road,
East Lansing, Michigan.

female ants that came out to run around on the surface of the ground at this time of day.

On June 3, I saw the mother bird building a nest about 15 feet up in a fire-damaged oak on the first acre to the south of mine. By June 16, the parents were carrying food to the nest, and on July 3, the young left the nest. These babies scattered widely, and on July 9, I saw a Cooper's hawk catch one under some oak trees across the road from my place. On July 11, the female was again building in the same oak, and on August 11, these young left the nest. In both nestings, exactly one month elapsed from the time I first observed nest building until the young left the nest.

By this time (mid-August), both parent birds were in heavy molt, and no further nesting was attempted. During early autumn, Mr. Fred Gallup of Escondido, a licensed bird-bander, with my permission, trapped and banded many of the birds visiting my garden. A number of mockingbirds were banded by trapping them where they came to drink, but of the resident pair, only the male was so marked. Mockers were common in the garden all through the winter, and they regularly came to drink and to visit the feeding tray. In early January, the banded male began to sing and to drive away other birds of the same species. One morning, from under a Torrey pine that had been one of this male's favorite singing perches, a sharp-shinned hawk flew out and left behind on the ground a small pile of crumpled mockingbird feathers. For a time after that, there was no more mockingbird song in my garden.

However, there were other mockingbirds in the neighborhood so that I could still hear the males singing. One of these, living just to the south of the territory of my birds, was an exceptional mimic. All the previous summer it had been necessary to be very careful about adding any species to my daily bird list, just from its calls, because this bird had a remarkable repertoire. Time and again he fooled me with calls of the acorn woodpecker, red-shafted flicker, killdeer, white-breasted nuthatch, and the strange sound made by the male black-chinned hummingbird when diving at the female. Even the cawing of a crow he would give, and sounding afar as if it came from down in the valley where crows occurred more frequently than in our own neighborhood.

After the death of the singer in my garden, this mimic began to visit me frequently. Apparently he had lost his mate for he was soon chasing my widowed bird all over the garden. By early February, the female seemed to be hunting a nesting site, and with the combined territories forming about five acres, she had many places to inspect. Cold, rainy days delayed her for a time. It was not until March 10 that I first saw her carrying nesting material. The site selected was in a small oak tree across the road from my place. She carried much material there but five days later had changed and was building about three feet above the ground in a sumac just outside my west fence.

On March 20, when neither of the birds were around, I took a hurried glance over the fence into this nest and saw that it was nicely made and well lined, but still without eggs. Then on the 24th the female had changed again and was building in the larger oak to the south where she had nested twice the previous year. This site proved satisfactory, and by the end of the month, the female was brooding.

Shortly after incubation started, another pair of mockers came to the garden. This male started singing from a high perch, and when the mimic flew at him, a flurry of fighting resulted. To my surprise, the mimic was soon routed and driven back almost to his nesting tree. He showed little inclination to fight for this territory which he had acquired with his new mate and soon had surrendered most of it. Not so with the female, however. This was *her* home, and she did not want to give it up. If the new female came into the garden, the old one would leave her nest and dart at the new arrival. This new one never offered fight but fled. Finally the new male had to drive the old female out of the territory so that his own mate could come in.

Fortunately, this new female was banded on the right leg so that she could be recognized readily. She seemed to be a young bird for she

started building in many places before finally completing a nest in a small oak tree across the road. In the meantime, the eggs in the nest of the older female hatched, and the parents were often seen carrying food to the young. After they left the nest, one of the youngsters wandered into a grassy, weedy area which was hunted regularly for grasshoppers by a kestrel, or sparrow hawk, and it was taken by the little falcon. After that I no longer could observe this pair closely for they moved back into the territory the male had possessed the previous summer. His imitations of other birds still fooled me at times.

The young banded female's brood left the nest on May 25, and two of these got out into the open weedy area and were taken by the kestrel. (In six years of watching the birds here, aside from these three young mockers, only one other bird—a house wren, have I seen caught by these little falcons.) The parents brought the remaining young mocker into my garden where it grew to adult size.

On May 28, the young female started building a nest on top of a six-foot-high, chain-link fence in a tangle of climbing rose briers. While building and around her nest, this bird was very timid and would fly away when I tried to watch her. At other times and elsewhere in my garden, she was the tamest of all the mockers in the area. Because of her timidity at the nest, I did not try to inspect it, but I did observe that she started brooding. On June 17, I found the half shell of a mockingbird's egg from which a baby bird had very recently hatched. A week later, the female was coming late every afternoon to the same ant hill where the young bird had fed the previous summer, and she was catching the winged ants and carrying them to feed to her young in the nest.

Such ant catching is not a common characteristic of mockingbirds and suggested to me that this was the same bird that had been raised in the area the previous year. The band on her leg proved that she had been here in the early fall when the banding was done. The fact that she would not fight the old female for this territory gave weight to the belief that the old female was her mother. This bears out the idea that has been advanced by others that young females of some species of birds may stay close to their home territory while young males are more apt to wander far away.

The addition of ants to their diet seemed to agree with the nestlings, and soon their cries for food could be heard whenever either parent came to the nest. On June 27, a great outcry from the mockers brought me on the run in time to see a roadrunner try to get at the mockingbird nest. Because of the tangle of briers, it had much difficulty in reaching the nest, and the young ones tumbled out and escaped.

Although these young were forced to leave the shelter of the nest a day or two earlier than they would have done if not disturbed, they found good hiding places in the shrubbery and all three lived to grow to adult size. As soon as the fledglings were out of the nest, the parents divided the brood—the female took care of two babies; the male fed the other. The two that the mother fed were quiet and docile, and they remained near each other in the same clump of bushes. The other one was very active and moved about continuously. With only one youngster to care for, the male still had much time for singing.

Because of the differences in the actions of these young birds, I guessed that the one which the father fed was a young male, and the mother's charges were young females. Several species of birds that nest in my garden have been observed to divide the care of the young when out of the nest and apparently on the basis of sex. Usually the parents seem to take charge of young of the same sex as themselves, but with one pair of another species, it was definitely observed that the parents took charge of young of the opposite sex.

On July 5, long before these young mockers were able to care for themselves, the mother started building a nest in a small red cedar tree. Soon she gave this up and on July 12, started another nest five feet up in a young avocado tree. On the 16th, she started brooding and thereafter did no more feeding of the other brood. The father now started feed-

ing all three, but all three also were finding some food for themselves.

On August 1, the parents started to carry food to the nest, and then the mother would chase the individuals of the older brood whenever she saw them. There were two young in this nest, and they left on August 12, again just one month from the time when construction of the nest began. These both grew to full size, but I did not have time to watch them closely. By this time both parents were molting rapidly.

During the autumn, the male disappeared, but the banded female was with me all winter and visited the feeder daily. In February, this female began to look for a mate, and the nearest singing male was the one to the south—the unusually good mimic. When that male would sing, the widowed female in my garden would answer him. Soon he would visit the area and chase the female around as mockingbirds do when courting. However, there was also a female in his own territory, and he spent much time chasing her as well.

On March 3, the male had been in my garden chasing the female and then returned to one of his favorite singing perches in his own territory. The banded female called after him and then began to sing. She sang a typical elaborate mockingbird song, rich and varied, and she did so quite expertly. I could see the band on her leg, and there was no question in my mind about the identity of this bird.

Just what factors were involved in solving this triangle, I do not know, but in a short time the banded female was living in the territory of the mimic and apparently had supplanted the female that had been living there. She frequently came over to visit the feeder or for water, but I had no chance to observe her nesting activities. Her mate occasionally sang in my area but spent most of his time in his own territory. One evening in June when I returned home from work, the male was scolding and crying from the utility wires in front of my place. I looked about for a cat but could find none. Then under a dripping water hydrant, a few mockingbird feathers were discovered. Some predator, apparently a cat, had killed a mockingbird there. After that, the banded female was never seen again.

The next morning, the male was singing rapturously, and in a few days he had another mate. Neither of these birds came to visit me, but I could hear the male singing, and later could hear the crying of young mockers in the area. In late summer, one young mockingbird took up residence in my garden, and I hope that it will continue to stay here so that next season there shall again be a pair of these delightful birds living as my close neighbors.

—The End.

THE GILA MONSTER

Continued from page 163

what he actually knew, he set a bad example for the authors who followed him by referring to it as a "frightful kind of lizard." That he himself was not misled by the term is indicated by his observation that the lizard "is more dreaded for its appearance than for its bite, and it never tends to harm anyone unless offended or provoked." Nevertheless it is plain that the Spanish settlers in Cuernavaca knew of the lizard's unsavory reputation among the Indians for at this early date when Hernandez wrote they were already calling it *el escorpión*. This name, like scorpion, its English equivalent, with antecedents in both Greek and Latin, has been largely restricted to animals that sting, or that are known to be or suspected of being dangerous in some respect.

With this as a background, Wiegmann, a German naturalist who got hold of an *escorpión* that he described over two centuries later in 1839, followed suit in selecting what he thought was an appropriate scientific name for the lizard. He called it *Heloderma horridum*, which is the Mexican species. The Gila monster remained unknown to science until after the Gadsden Purchase of 1853 when naturalists attached to the commission surveying the Mexican boundary sent specimens to the United States National Museum. One of these was depicted under the name *horridum* in 1859, but ten years later a discerning scientist, Edward Drinker Cope of Philadelphia, called attention to the differences between the Mexican lizard and those more recently obtained in Arizona. Noting that it was still uncertain whether these lizards from Arizona were actually venomous, he mentioned the grooved teeth and other suspicious structures suggesting this possibility, pointedly adding that he proposed to call it *Heloderma suspectum*.

Over a century and a half prior to Cope's recognition of the species, Spanish-speaking Mexicans had pushed northward into Sonora, which then included regions that later became part of Arizona. In 1776, the year of our Declaration of Independence, settlers moved into Tucson, previously the site of an Indian Village. The *escorpión* had been left behind in the foothills of the southern part of Sonora, to be replaced by the Gila monster in the Sonoran Desert. That the settlers brought along some of the myths as well as the name, is indicated in a written account of an unknown Jesuit priest. Writing from Sonora in 1763 he states, "people here call a kind of lizard that goes on four feet and has a short tail, as if chopped off, an *escorpión*. It is variously spotted and very poisonous. They say that the only remedy for its bite is to cut off the wounded part immediately."

The priest also mentioned the "infectious breath," which may have stemmed from beliefs to the south, where the *escorpión* was supposed to exhale a nauseous odor, and its venom dropping to the ground after the lizard had been secured in a forked stick was said to cause all vegetation to wither for yards around. Through the years this belief seemingly gained some frills. After the arrival of the Americans in Arizona, an Apache attached to the military command in Tucson told his officer that the very breath of the animal was deadly poison. The story must have been prevalent throughout southern Arizona, for it is mentioned in several of the earlier reports.

It reached its peak a few years later in a story said to have been written by a Colonel A. G. Tassin, whose imagination was considerably better than his veracity. According to him the breath of the Gila monster is not only offensive, but "issues from a wide open mouth in puffs of black vapor or smoke." Tassin goes on to say that "having myself seen a chicken and a small puppy killed by the hissing of one in their faces, I am inclined to think that it is best

to keep from coming in contact with it." If any conclusion can be drawn from this statement, it would be that Tassin never got close enough to a Gila monster to see *what* it did!

(To be concluded in the next issue)

COATIMUNDI — *Continued from page 167*

in length, half of which is tail. A husky male may weigh 20 pounds, the average animal closer to 12. That they were aboriginals in South America is shown by the discovery of their fossilized remains side by side with those of animals long since extinct. And that they are slowly extending their range northward is shown by the fact they are common enough in Arizona and New Mexico today but were almost unknown there 50 years ago. In recent years one was captured near Los Angeles, another was shot near Woodward, Oklahoma, 500 miles from its usual haunts. Before accepting these isolated cases as further proof of migration, it is well to recall that for many years they have been sold along the Mexican border to northbound tourists. And like Trudy, some may have escaped from their new homes.

Curiously enough, the Oklahoma wanderer, whether an escaped pet or a wild-ranging pioneer, had built a large nest in the crotch of an old cottonwood — a globular mass of twigs and vines loosely woven together. This is the only reference in the literature I can find concerning dwellings of these nomads. In Panama, I'm sure they erect no permanent homes, but that they can survive one way or another under climatic conditions and environment far different from Panama seems well established.

What are the enemies of coati? Jaguars, pumas, and ocelots undoubtedly enjoy their flesh, but coati is really his own worst enemy. The male is especially pugnacious. With a chip on his shoulder he seems eager to fight any and all who cross his path or purpose. He fights without gloves, without giving or expecting mercy, his razor-sharp canines and longer claws inflicting dreadful wounds. The preliminaries of such fighting, however, are most amusing.

To "turn up one's nose" is to show contempt. The expression must have originated with coati, for when one meets another the most eloquent use is made of that strange proboscis. Utter contempt for each other is written all over their usually amiable countenances. Their noses twist this way and that and they utter low pig-like grunts and chirps to make their grimacing all the more grotesque. Usually the trespasser or sex rival finally retreats before this odd display of anger. If not, they are soon at each other's throats, biting, slashing, clawing, and rolling over and over in mortal combat, all the while giving vent to high-pitched yips. No coati past his prime has much chance to survive such an encounter.

At Barro Colorado a vicious fight over occupancy of a plantain tree had been going on; it sounded like a dog fight. Then the victor emerged into the clearing. He limped badly, but his question-mark tail projected above the grasses as he resumed his foraging. He seemed to say to all the jungle world, "Here I come. Pay due respect." —THE END.

LETTERS — *Continued from page 152*

Birds and TV

Here is a new idea, I think, in bird watching. It is a lazy-man's way, but it is fun when the snow lies deep in northern Ohio:

The TV birds first came to my attention in watching a football "bowl game" on the west coast. Since then I have compiled the following list—all seen on the TV screen:

Western gulls—Bowl Game—Pasadena

Herring gulls—Hudson River—Dave Garroway

Vultures and parrots—Honduras—Bold Journey

Flamingos—Hialeah Race Track

Starling—Havana—Dave Garroway

Flamingos—black-crowned night herons—South America—Bold Journey

Gulls—Suez Canal—Dave Garroway

Weaver birds—cormorants—pelicans—marabou storks—Cape gannets——South Africa—Bold Journey

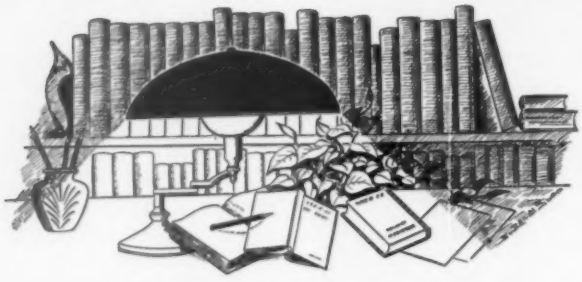
Mallards — American egrets — Canada geese—Canada—Bold Journey

TV camera men, not being bird-minded, pass hurriedly by many others, but the above I am sure of.

HARLIE G. STEVICK

Elyria, Ohio

BOOK NOTES



By Amy Clampitt, *Librarian, Audubon House*

BIRDS OF ALASKA

By Ira N. Gabrielson and Frederick C. Lincoln, Stackpole Company and Wildlife Management Institute, Harrisburg, Penna., and Washington, D. C., 1959. 9¼ x 6 *in.*, 922 *pp. Illustrated. Indexed.* $15.00.

The ornithological history of Alaska begins — humanly speaking — on July 20, 1741, when Georg Wilhelm Steller, a member of the Russian expedition which discovered the territory, went ashore at Kayak Island, and observed a dark, crested jay which was later to be named in his honor. Much fascinating information is given in this compendious and painstaking work, which draws upon a number of hitherto unpublished records — from Dr. Gabrielson's own extensive observations to a list obtained from the Academy of Sciences of the U.S.S.R. For each of the 321 recorded species, represented by 414 races, and including 104 forms which have been classified as casuals or accidentals, a considerable amount of space is devoted to its range in Alaska, in addition to data on its general range, appearance and habits, and a listing of native names in various Eskimo and Indian dialects. There are, as well, a detailed historical introduction, a summary of ecological zones, and a useful gazeteer compiled by Myra A. Putnam. Olaus J. Murie and Edwin R. Kalmbach have contributed, between them, a total of ten color plates, representing some 50 species in various plumages. The bibliography—more than 50 closely printed pages — is exhaustive. This is, in short, a major reference work, as well as a very interesting one.

DEMON OF THE NORTH

By Peter Krott, Alfred A. Knopf, Inc., New York, 1959. 8⅝ x 5½ *in.*, 260 *pp. Illustrated.* $5.00.

The beginning of Mr. Krott's interest in the wolverine was, he tells us, a purely mercenary one; but it did not long remain so, and of his subsequent entanglement with that obscure and refractory mammal this odd memoir is the record. The process of becoming an authority on the behavior of wolverines brought with it a good many complications which a more detached student of ethology might have regarded as irrelevant. But the tupu (as Mr. Krott privately and very aptly renamed it) is a wayward, affectionate, clever, cautious, inquisitive, and highly temperamental creature, whose attributes scarcely lend themselves to detached study. By the time his researches came to an end he had, at various times and in various places in and out of Finland, given house room to a total of 31 of its kind, whose capture and transportation necessitated a good many journeys, all more or less harrowingly eventful, and involving (generally against their will) a considerable number of startled human beings. When he took his household and his researches — the two being by then inextricable, and including a wife and baby as well as three tame but far from domesticated tupus — to Sweden, they abruptly became the center of a hue and cry in which the local populace, the press, and the Swedish government were soon embroiled, and in which certain not unfamiliar attitudes towards predatory animals were vehemently aired. The end of it all is more sad than funny, but Mr. Krott's wry, candid, and affectionate way of telling his story makes it very entertaining.

RIVER WORLD: WILDLIFE OF THE MISSISSIPPI

By Virginia S. Eifert, Dodd, Mead & Company, New York, 1959. 8¼ x 5⅝ *in.*, 271 *pp. Illustrated. Indexed.* $4.00.

All knowledge, we are told, reaches us through the senses — a proposition the truth of which we need a book like this one, now and then, to demonstrate. Mrs. Eifert's knowledge of the life along our greatest river is clearly, to a large extent, a matter of first-hand experience. When she writes of how the willow-covered temporary islands

known locally as "towheads" come into being, it is with the natural authority of one who has seen it happen. Her gift for converting sensations themselves into facts is based upon a discerning eye and a well-tuned ear; but what makes her descriptive writing peculiarly vivid is the attention given to the way things smell. On page after page she evokes the experience itself: arbutus, pine needles, and the first thaw at the end of winter; the tropical fragrance of a Louisiana bayou; wild grape, honeysuckle, bottomland cornfields, and most particularly the complex exhalation that river people call the "willow smell." The effect of all of this is bound to be the happy one of sending the reader out to sniff for himself.

LIVING EARTH

By Peter Farb, Harper & Brothers, New York, 1959. 8⅜ x 4½ *in.,* 178 *pp. Illustrated. Indexed.* $3.75.

The ecology of the soil is a matter so obscure and complex that it is as much a surprise as it is a pleasure to meet with a book which not only tackles this formidable subject, but makes it fascinating. Part of the great interest of "Living Earth" is simply that much of what Mr. Farb has to report is, for most laymen, really news. His method here is as far as possible from the deplorable but all too common practice of wrenching a highly colored instance from its context and holding it up as a prestidigitator does his ubiquitous and in the end rather tiresome rabbit, perennially entreating his audience to be flabbergasted. (To paraphrase a well-known blonde, fun is fun, but nobody wants to be flabbergasted *all* the time.) We are invited to observe not a collection of isolated phenomena, but a process in operation – the endless continuity of nature itself, and also the means by which the current knowledge of it has been, and is being, obtained. We are thus inevitably given some idea of the gaps in that knowledge – one of the most tantalizing of these being the problem of how an undifferentiated termite nymph is instructed, as it were, to become a member of the soldier caste when a soldier is needed. The most striking thing about the multitudinous diversity of what goes on underground, as Mr. Farb sees it, is the recurrence of what he calls "mutual survival" – those symbiotic partnerships which have even, he tells us, formed the basis for one theory of the origin of species. And throughout, whether he writes of chernozems, nematodes, yellow-jackets, witchweed, or antibiotics, he invariably turns a graceful sentence and knows how to be entertaining without standing on his head.

THE MAMMALS OF NORTH AMERICA

By E. Raymond Hall and Keith R. Kelson. Ronald Press, New York, 1959. 11 x 8 *in.,* 1,193 *pp.* (2 *volumes*). $35.00.

As of 1957, a total of 1,003 species (3,679 species and subspecies) of mammals were recognized for the territory ranging from Greenland on the north to Panama and southward to the West Indies. It is the guess of Professor Hall that when all the pertinent data are in, the number of distinct and valid species native to North America will have been boiled down to approximately 800. Paradoxical though it might seem, the number of recognized species has been steadily shrinking as the number of collected specimens has increased. As the bibliography to these two massive volumes attests, the labors of taxonomists in regard to mammals, though still incomplete, have been prodigious. It is thus the detailed range maps, and the accompanying listings of the marginal locations upon which the boundaries of each individual range have been based, which constitute the work's primary interest. Line drawings showing three-way views of the skulls of some 500 species have been included, and while the intention has not been to produce a manual for field identification, there is a smaller number of sketches of the living animal. Both vernacular and scientific names have been indexed, and an introductory discussion of North American zoogeography and a concluding section on collecting and preparing study specimens will be helpful to the practicing zoologists for whom the volumes are mainly intended. The printing is clear and the binding is both substantial and attractive.

CORAL ISLAND: PORTRAIT OF AN ATOLL

By Marston Bates and Donald Abbott, Charles Scribner's Sons, New York, 1958. 9½ *x* 6 *in.,* 254 *pp. Illustrated. Indexed.* $4.95.

"Such formations surely rank high amongst the wonderful objects of this world. It is not a wonder which at first strikes the eye of the body, but rather after reflection, the eye of reason. We feel surprised when travelers relate accounts of the vast piles and extent of some ancient ruins; but how insignificant are the greatest of these, when compared to the matter here accumulated by various small animals." Thus Charles Darwin, with the penetration of genius, wrote in his journal after his single brief exploration of a coral atoll. The authors of this book were more fortunate: in 1953, under the auspices of the Pacific Science Board, they were part of a team which spent several

months investigating just such a formation—its land and marine life, and the relation of these to the human populace. To say that they enjoyed themselves is not to suggest that their work suffered, even after they adopted the local custom of going about it adorned with garlands. The final effect of this engaging though rather loosely written account of their stay is a mild but nevertheless distinct nudge at the substantial if not altogether stable atoll of assumptions which sometimes goes under the name of Western Civilization.

HURRICANE

By Marjory Stoneman Douglas, Rinehart, New York, 1958. 9¼ *x* 6 *in.,* 383 *pp. Illustrated. Indexed.* $5.95.

Up until the early nineteenth century, when a young man named William Redfield began to interest himself in the behavior of storms, there had been no scientific study of hurricanes. They were known, of course, long before that—both in New England, where they were referred to as "line storms," and in Old England as well, where a report of a hurricane disaster off the coast of Bermuda found its way, via the imagination of her greatest poet, into one of his most delightful plays, "The Tempest"—and where, moreover, what appears to have been the last gasp of a Caribbean hurricane played its part in the defeat of the Spanish Armada. In the Caribbean itself, the earlier history of hurricanes, as gathered from scattered ships' logs, diaries and chronicles, so abounds with violence, intrigue, and melodrama—with piracy, shipwrecked treasure, and desperate turning-points—and is here narrated in a manner so swift, tense, and flamboyant, that the battered reader begins rather desperately to long for something resembling a Still, Small Voice. The second half is more satisfactory, there being enough sober factual material available to relieve the author of having to piece her sources together into what perhaps inevitably resembles a costume thriller; and the final section, entitled "*What's to Be Done?*" is a very sober one indeed. Altogether, a book packed with information, all of it intensely fascinating.

GEORGE PERKINS MARSH: VERSATILE VERMONTER

By David Lowenthal, Columbia University Press, New York City, 1958. 9¼ x 6 *in.,* 442 *pp. Illustrated. Indexed.* $6.50.

It may be startling to realize that the very concept which conservationists nowadays take for granted—of the interdependence of all living things and of man's place among them as a free and responsible agent—was, not even a century ago, still a new and original idea. It was first explicitly propounded in George Perkins Marsh's "Man and Nature"—a book which, after being nearly forgotten for a generation or so, is coming to be recognized as what Lewis Mumford has called "the fountain-head of the conservation movement." Published in 1864, "Man and Nature" was written in Italy, where its author spent the last 21 years of his long life as United States Minister; but its beginnings go back to his Vermont boyhood, when his father drove with him through the Green Mountains and showed him what a watershed looked like. The career that spanned and synthesized such remote happenings was a remarkable, even an odd one. From a frail and precocious child, George Marsh developed into an aloof and somewhat cantankerous young man, prodigiously gifted but so continually beset by disappointment and misfortune that his story up into middle life is a bleak recital indeed. But at an age when most men are thinking of retirement he last found himself, and it is one of the fascinations of this biography to see how he mellowed in the process from a rather repellant personality into one for whom the reader feels affection as well as respect. With all his quirks and contradictions, George Marsh had an intellectual breadth and penetration that was very close to genius, and this record of his life and times is valuable for the insight it gives into our own.

ANIMAL CAMOUFLAGE

By Adolf Portmann, University of Michigan Press, Ann Arbor, 1959. 8½ *x* 5 *in.,* 111 *pp. Illustrated. Indexed.* $4.50.

There can be few subjects concerning which more misconceptions and downright misinformation have been more flagrantly scattered abroad than animal camouflage — particularly that aspect of it involving the phenomenon known (perhaps unfortunately, and certainly misleadingly) as mimicry. Nor is this surprising, since among the authorities themselves mimicry continues to be what Dr. Portmann calls "a veritable no man's land of biological battle." (In a recent minor skirmish — too recent for mention in the work at hand — a lepidopterist determined to get at the bottom of the famous case of the monarch and its alleged mimic, the viceroy, made a sort of history by persuading certain of his colleagues to *eat* a few monarch butterflies. However, so far as we know, the battle yet rages.) This brief and unhectic discussion, which has the advantage of being profusely illustrated, is especially valuable for showing where the present state of opinion is inconclusive, and also some of the steps by which that opinion has been reached. Whether, for example, the mechanism by which the American anole, more often (but incorrectly) referred to as the American chameleon, is able to change color, is truly a product of natural selection, remains debatable; but on the other hand, the functioning of the mechanism itself is at least well enough understood to be described in detail. It is of interest to note, however, that the advocates of natural selection do have evidence to support their views. Some ingenious experiments with fishes, mice, and caterpillars have demonstrated that what looks like camouflage to human eyes does make it harder for the animals that prey on them to see them.

THE CHANGING FACE OF NEW ENGLAND

By Betty Flanders Thomson, The Macmillan Company, New York, 1958. 8½ *x* 5½ *in.,* 188 *pp. Illustrated.* $3.75.

There are few subjects more stirring, when properly introduced, than geology; but so broad is its scope and so majestically slow its tempo that hardly less than a poet's gifts are required to bring it alive. Here, happily, a gracefully unpretentious style combines with considerable descriptive power and a teacher's skill in exposition to produce one of those rather rare books which do just that. Miss Thomson's field is botany, and in dealing with this limited area she is able to concentrate on the comparative quickstep (geologically speaking) of plant succession, and to show how human activities have been interwoven with those of glaciers and

Continued on Page 192

ANNOUNCEMENT

The next annual meeting of The American Ornithologists Union (A.O.U.) will be held at Regina, Saskatchewan, August 25 to August 30, 1959. For details write to Dr. Robert W. Nero, Saskatchewan Museum of Natural History, Regina, Saskatchewan. — THE EDITOR

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Your CHILDREN

By Shirley Miller

ON rare occasions in this world the name of a person becomes so synonymous with his accomplishments as to assume the actual identification of these accomplishments by name (for instance —pasteurize and macadamize). And with this thought in mind, it wouldn't surprise us to find future dictionaries using the name, CHARLES M. GOETHE, as

Charles M. Goethe, beloved friend of children throughout the world. Photograph courtesy of *Sacramento Bee*.

a definition for "conservation education for children." So outstanding and widespread are his successful accomplishments in this field that no introduction to this great man is necessary, but we do want to tell you of recent recognition accorded him by the establishment of the Charles M. Goethe Arboretum on the campus of Sacramento State College, California.

The project was initiated by the Sacramento Audubon Society, under the leadership of Mr. Warner L. Marsh, Arboretum Chairman. However, Mr. Marsh tells us that "spontaneous combustion" is a fitting phrase to describe the enthusiastic cooperation given this project by civic and academic organizations, museums, garden clubs, churches, and government agencies. Dedication of the Arboretum on March 28, 1959, when 27 organizations each planted a tree of their selection in the area, coincided with the day Mr. Goethe reached the ripe young age of 84 years. We are delighted to reprint in this column the PROCLAMATION issued by the Mayor of Sacramento in honor of this event:

WHEREAS, the welfare of humanity is the sole concern of Charles M. Goethe, well known Sacramento Naturalist who has devoted a lifetime of work on behalf of millions of his fellowmen the world over, and

WHEREAS, because Charles M. Goethe is a person of great intellect and humility, his lifetime of work for mankind has largely gone unnoticed by the general public, and

WHEREAS, many millions of Americans stroll through stately redwoods and vacation and play in State and National Parks which exist in some measure due to his unending fight to preserve the beauties of nature for the people for all time, and

WHEREAS, the beginning of the playground system in Sacramento and in the United States is largely credited to Charles M. Goethe and his friends who conducted the program at their expense until the taxpayers were convinced it was worthwhile as a preventive for juvenile delinquency, and

WHEREAS, he was instrumental in introducing playgrounds to the Philippines, Japan, China and Hindustan and millions of children throughout the world romp on supervised public playgrounds because he personally sold nations on the idea, and

WHEREAS, Charles M. Goethe and the late Mrs. Mary Glide Goethe played leading roles, too, in the establishment of the State's first tuberculosis sanitarium, the Sacramento Junior College, the Capitol Mall and the Sacramento-Yolo Port District, and founded the Sacramento Council of Churches and the California Council of Churches;

NOW, THEREFORE, I, CLARENCE L. AZEVEDO, Mayor of the City of Sacramento, hereby proclaim Saturday, March 28th as DR. CHARLES M. GOETHE DAY in Sacramento, in recognition of the magnificent contribution which he has made to the community on behalf of human betterment during his lifetime, and in commemoration of the Charles M. Goethe Grove which is being planted and dedicated on the occasion of his 84th birthday anniversary on this date at the Sacramento State College Campus.

ISSUED: THIS 26th day of March, 1959.

CLARENCE L. AZEVEDO
Mayor

At the dedication of the Charles M. Goethe Arboretum on the campus of Sacramento State College, the Del Paso Manor Audubon Junior Club chose a *Cedrus deodara* for the planting ceremony. Reading from left to right, Mr. John H. Baker, President of the National Audubon Society, who was one of the speakers at the dedication, Dale Ann Stillwell, Sally Shoemaker, Mr. Fred Evenden, President of the Sacramento Audubon Society, Tina Casenya, Marian Zambelich, Marilyn Landay, Mrs. Inez Johnson, Leader of the Audubon Junior Club, Kathy Jo Steves, Christine Johnson, and Ann Gilham.

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BOOKS — *Continued from Page 188*

hurricanes in giving the New England landscape its peculiar character. There are some helpful maps, but no photographs.

RIVERS, MAN AND MYTHS: FROM FISH SPEARS TO WATER MILLS

By Robert Brittain, Doubleday, Garden City, N. Y., 1958. 8½ x 5½ *in.*, 288 *pp. Illustrated. Indexed.* $4.50.

Anyone who has wondered about the reason for the bottle of champagne, smashed by a pretty lady, without which no ship is properly launched, may be just a bit taken aback to learn that it appears to derive from an immemorial custom in which the original prototype of the bottle-smashing was a human sacrifice. Anthropology, archaeology, and geology all figure in the inquiry which provided the above intelligence, and there is also a good deal of a technological nature—such things as fish-hooks, shadufs, and the evolution of the water mill. However, what has chiefly fascinated the author is clearly the idea of the river itself—as a natural force, or an agent of change, a symbol of all that is paradoxical and inscrutable in human affairs. To this conception Mr. Brittain brings a poet's power of visualization and a gift for conveying it in well-turned, flexible prose.

WHALES AND WHALING

By Paul Budker, The Macmillan Company, New York City, 1959. 8½ x 5½ *in.*, 182 *pp. Illustrated.* $4.50.

A spirited essay on the great warm-blooded, sea-going creatures whose largest living representatives are—from all available evidence—the largest the world has ever known. The record for size belongs to a blue whale measuring 89 feet and weighing something over 136 tons—which the author makes easier to imagine by reminding us that a whole herd of elephants would be needed to equal it! Dr. Budker deals briskly with various rumors, legends, and pure fabrications which not surprisingly persist concerning such vast and elusive beings; but the authenticated facts he records—as, for example, the daring technique employed by Japanese whalers of less than a century ago, or the ramming and sinking of a modern ship by a whale in its last agony—are astounding in themselves. A final chapter deals with protection and regulations.

BIRDS OF CYPRUS

By David A. Bannerman and W. Mary Bannerman, Oliver and Boyd, Edinburgh, Scotland, 1958. 11 x 7½ *in.*, 384 *pp. Illustrated. Indexed.* 63 *shillings* (*around* $10.00).

A big, lavish book, in the generous format which is almost a trademark with this Scottish publisher of ornithological works. The position of Cyprus, almost due north of the Nile Delta, is in the path of migration of birds to and from both Europe and Asia, with the result that more than 300 species are known to occur. In spring, we are told, the concentrations of northward-moving passerine birds are often spectacular. Less attention had been paid to the autumn migration until 1957, when the field notes collected by members of British military forces stationed on Cyprus were reminiscent of a day on Hawk Mountain. Data on climate and topography, banding records, and an ornithological history of the island are included, and besides a good many text figures in black and white, there are 16 color plates.

JUNIOR BOOK

WHO LIVES IN A FIELD? (7-11)

By Duryea Morton, Coward-McCann Inc., New York, 1959. 8⅝ x 6½ *in.*, 126 *pp. Illustrated.* $3.00.

The device used in this book is really a game—the sort of game immortalized in, among other things, James Joyce's "Ulysses." We follow the paths, successively, of an owl, a mouse, a shrew, a woodchuck, a cottontail rabbit, a fox, and a teen-age boy. Inevitably, these paths cross, and each of the encounters is told and retold from the point of view of each of the participants. While some youngsters may find so much chronological doubling-back merely confusing, those (boys especially, one would guess) with a real taste for nature study will probably follow the chase with relish. Mr. Morton's handling of the facts of predation and reproduction—always a tricky matter—is wholesome and straightforward, avoiding both the melodrama and the over-clinical detachment which so frequently mar life-history books for younger readers. Bringing in a real boy, with a boy's dogged curiosity about wild things, pulls the whole thing into focus; and the conclusion, in which the boy's father imbibes that curiosity to the extent that he actually spends a night in the tree-house his son has built, is highly satisfactory.

The Audubon Christmas Card For 1959

The appealing 1959 Christmas card is reproduced in color from an original painting showing a saw-whet owl in white pine. The artist is Don R. Eckelberry, known to all Audubon Members as the illustrator of the Audubon Guides and many other books.

The cards measure 5" x 7" — 20 cents each — 10 for $1.75 — 25 and any quantity over, 15 cents each. Envelopes included.

The message reads:
Christmas Greetings and all good wishes for a Happy New Year.

We regret to say that we cannot take orders for imprinting names.

Please add 25 cents for orders under $5.00 and 50 cents for orders over $5.00 for postage and handling.

FROM 1958

First come! First served!

There are some of last year's cards available. The card reproduced in color shows 2 red polls in a wintry field by Don R. Eckelberry. One of the most popular we have ever had.

Cards measure 5" x 7" — 20 cents each, 10 for $1.75 — 25 and any amount over 15 cents each. Envelopes included—Postage rates and message as stated above.

Service Department
NATIONAL AUDUBON SOCIETY, 1130 Fifth Ave., New York 28, N. Y.

LET'S ALL GO!! TO AN AUDUBON CAMP

Outdoor Education for Adults

Learn together today to Share together tomorrow

Learn how to enjoy the out of doors TOGETHER

MAKE NATURE-LORE YOUR HOBBY

Photo by Charles Darneal

Mr. and Mrs. Yancey Altsheler, pictured above, have developed a happy hobby into a full-time, mutual interest in the outdoors. They went to the Audubon Camp of Wisconsin together and, to quote from some of their correspondence: "The Audubon Camp was all that we expected and more . . . interests there are far wider than ornithology . . . the top-flight naturalists, who lead field trips, also instruct in plants, insects and reptiles, soil conservation and geology . . . we came back marvelously refreshed and informed . . . I felt like a schoolboy again, for those two weeks . . . it was daily fun. . . ."

Family participation in any experience enriches family life and makes every day a *fun* day.

"Erma and I wish we had started going to Audubon Camps thirty years ago," so begins a letter from Mr. and Mrs. A. G. Siebert. "Our new world discovered at Camp makes us anxious to get into the woods and fields in order to learn more and more about the 'laws of life governing community interdependence' . . . the efficient program without a dull moment is stimulating, mixed with fun and education . . . girls, get your businessmen husbands to go to camp; businessmen, get your wives to go with you . . . they will enjoy it . . . Erma and I had a priceless experience. . . . The world will have new meaning for you as it now has for us. . . "

LET'S ALL GO!!

Husbands and Wives

Fathers and Sons

Mothers and Daughters

Brothers and Sisters

(Minimum Age 18 Years)

AUDUBON CAMPS ARE IN:

CONNECTICUT — MAINE

WISCONSIN — CALIFORNIA

write to

NATIONAL AUDUBON SOCIETY • 1130 Fifth Avenue • New York 28, N. Y.